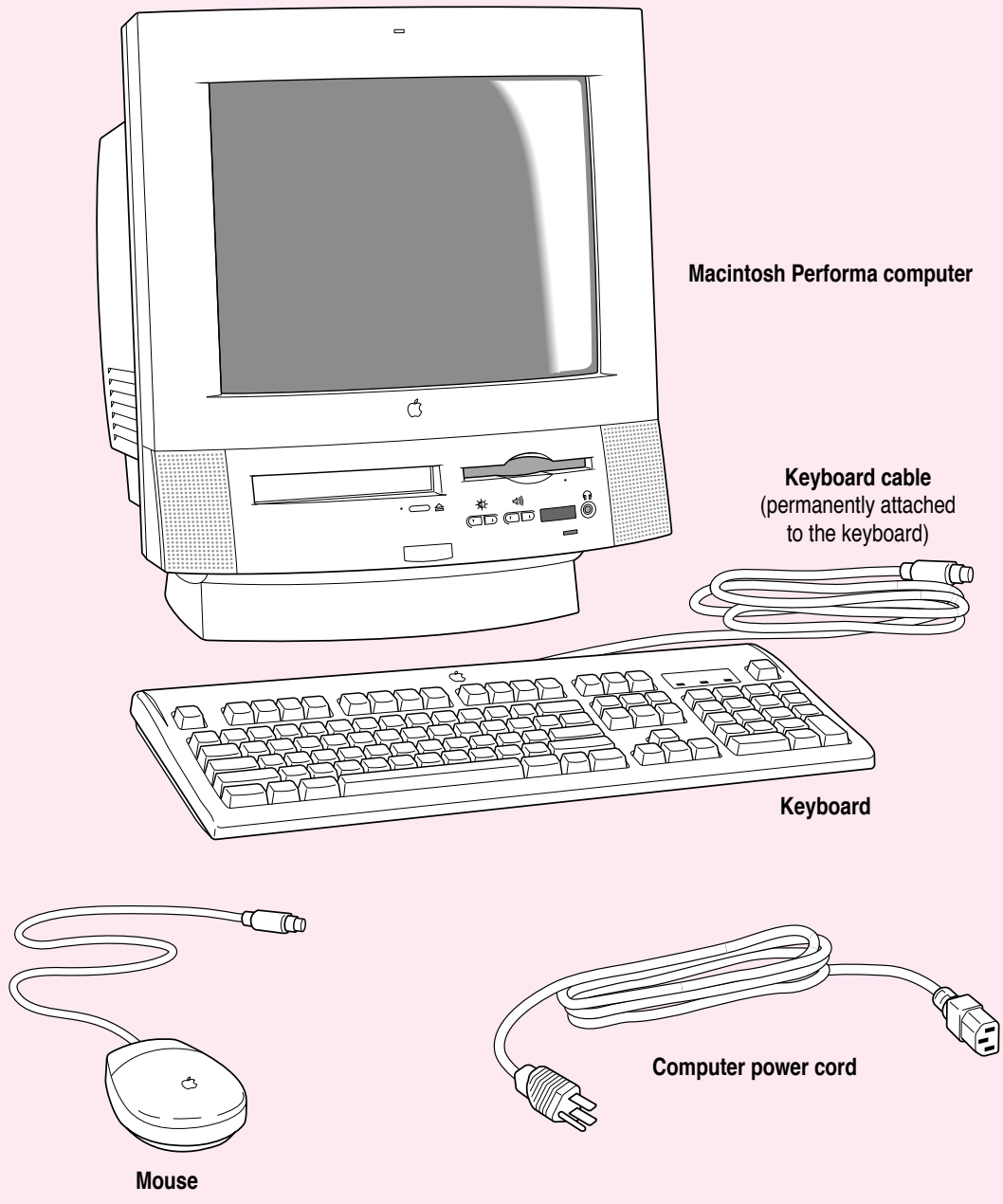

Macintosh Performa computer
Keyboard cable
(permanently attached
to the keyboard)
Keyboard
Mouse
Computer power cord

Follow the instructions in this chapter to set up your computer and learn the basics.

1 Getting Started

The illustration on the facing page shows all the equipment you will need to set up your computer and begin using it. Place your equipment on a sturdy, flat surface near a grounded wall outlet. Before following the setup instructions in this chapter, you may want to read "Arranging Your Office" in Appendix A (in the section on health-related information) for tips on adjusting your work furniture so that you're comfortable when using the computer.

If you used the setup poster: The poster included with your Macintosh Performa computer was designed to help you start using your computer as quickly as possible. This chapter contains more detailed information than the poster. If you have already set up your computer using the poster, you may want to turn to the section "What's Next?" later in this chapter.

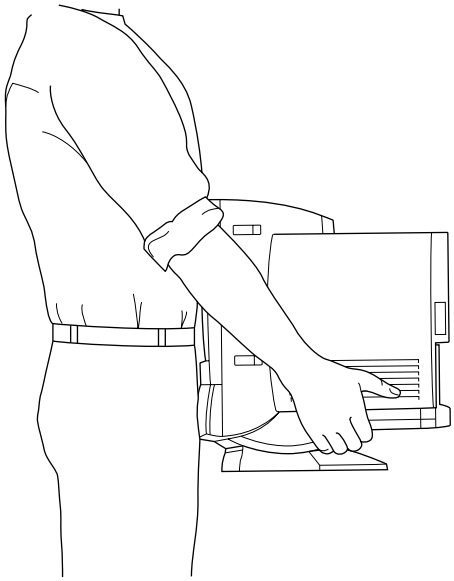
Plugging in the computer

Before you plug your Macintosh into a wall socket, carefully read all the setup instructions in this chapter. Then, before you connect anything to your Macintosh, follow the instructions in this section to plug it in. The plug grounds the computer and protects it from electrical damage while you are setting up.

When you are ready to begin, follow these steps:

1 **Place the computer where you want it.**

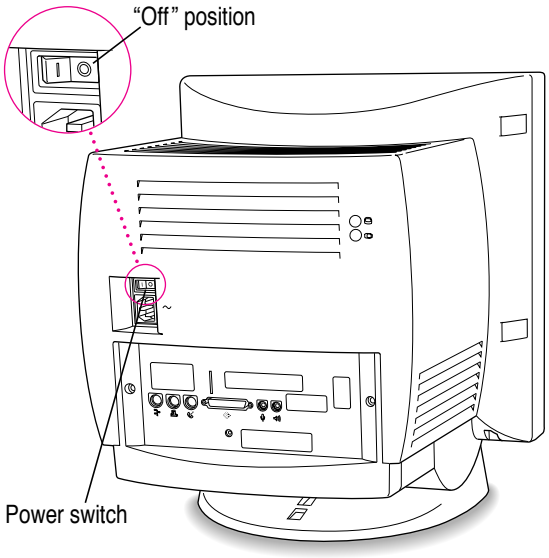
Carry the computer with its screen facing you. Most of its weight is near the screen. Lift with your knees, not your back.



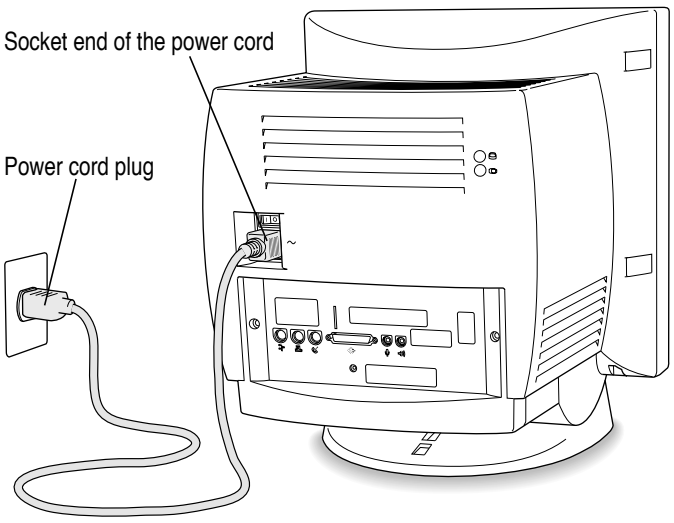
2 Plug the socket end of the power cord into the recessed power plug (marked with the symbol ~) on the back of the computer.

Make sure at least one end of the power cord is within easy reach so that you can unplug the computer when you need to.

IMPORTANT To protect both yourself and the computer from electrical hazards, the computer should remain turned off until you are finished connecting its parts. Check the power switch at the back of the computer. Make sure that the side of the switch marked with the ○ symbol is pressed in.



3 **Plug the other end of the power cord into a three-hole grounded outlet or power strip.**



WARNING This equipment is intended to be electrically grounded. Your Macintosh is equipped with a three-wire grounding plug—a plug that has a third (grounding) pin. This plug will fit only a grounded AC outlet. This is a safety feature. If you are unable to insert the plug into the outlet, contact a licensed electrician to replace the outlet with a properly grounded outlet. Do not defeat the purpose of the grounding plug!

Installing an expansion card

If you purchased an expansion card for your Macintosh, install it now. (See Appendix B, "Installing an Expansion Card," for instructions.) If you don't have an expansion card, continue with the next section, "Connecting the Modem."

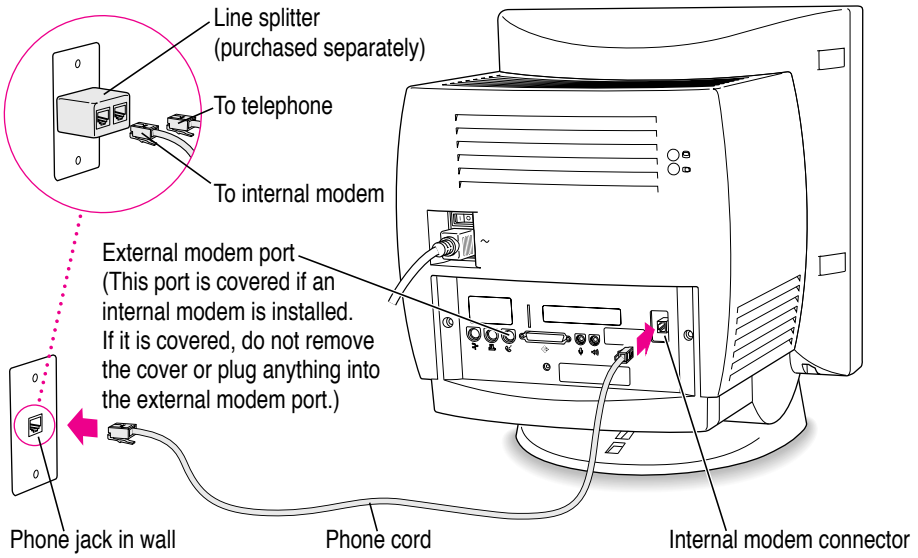
Connecting the modem

A modem is hardware that may already be installed inside your computer. The modem enables your computer to send and to receive faxes and telephone calls, to connect to the Internet, to access online services, and to communicate with other computer users. (To use the modem, you must also set up the appropriate software already installed on your Performa.)

If your computer came with an internal modem and you want to connect the modem now, follow the next illustration. You can confirm whether you have an internal modem by seeing if you have an internal modem connector on the back of your computer, as shown in the next illustration. (Also, a standard telephone cord will have come with your computer.)

If your computer came with an external modem, connect it to the external modem port and follow the instructions in the modem manuals that came with your computer or with the modem.

IMPORTANT When connecting a modem, make sure you connect the modem to an analog phone line—the kind used typically in homes. (A digital phone line could damage the modem.) If you're connecting the modem at home, you probably have an analog phone line. Your modem manuals contain more information about using your modem.



You can use any standard phone cord to connect your internal modem connector to a phone jack. If you have only one phone jack, consider purchasing a line splitter at an electronics supply store. A line splitter enables you to plug your phone and modem into the same jack at the same time. Keep in mind that when your phone and your modem share a single phone line, you will not be able to use both pieces of equipment at the same time, even if they are attached to separate phone jacks. While you use your modem, outside callers get a busy signal and you cannot call out. When your phone is in use, you cannot use the modem.

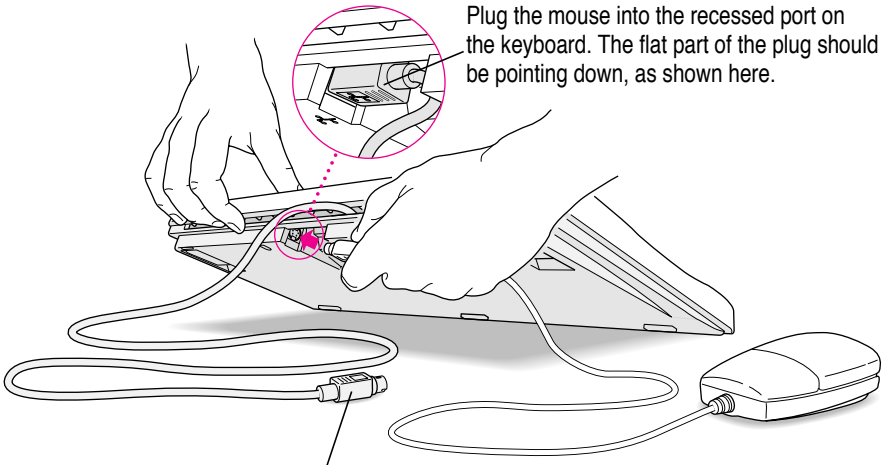
IMPORTANT Disconnect your modem from the phone jack during lightning storms to prevent voltage overload.

Connecting the mouse and keyboard

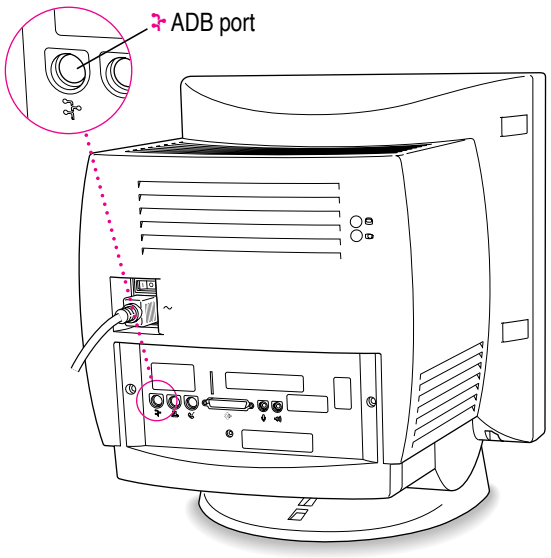
1 **Plug the mouse cable into the recessed port on the back of the keyboard.**

The plug and the port are marked with the ⌘ icon (symbol). The positions of the port and icon on your keyboard may be different from those pictured.

By the way: A port marked with the ⌘ icon is called an Apple Desktop Bus (ADB) port.

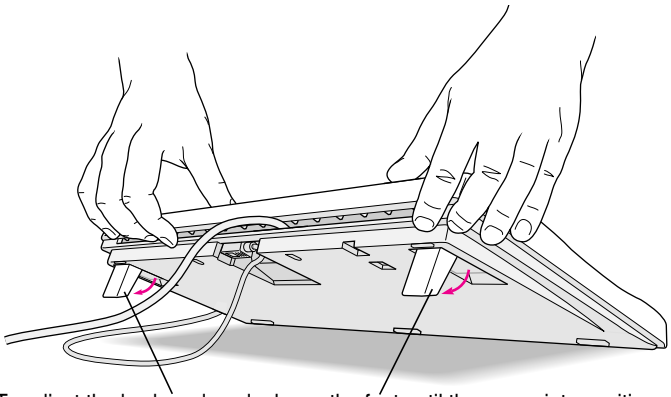


2 **Plug the keyboard cable into the ADB port marked with the ⌘ icon on the back of the computer.**



If you use a second monitor in addition to the one built into your computer, it may also have a port to which you can connect the keyboard or mouse. See the information that came with the monitor.

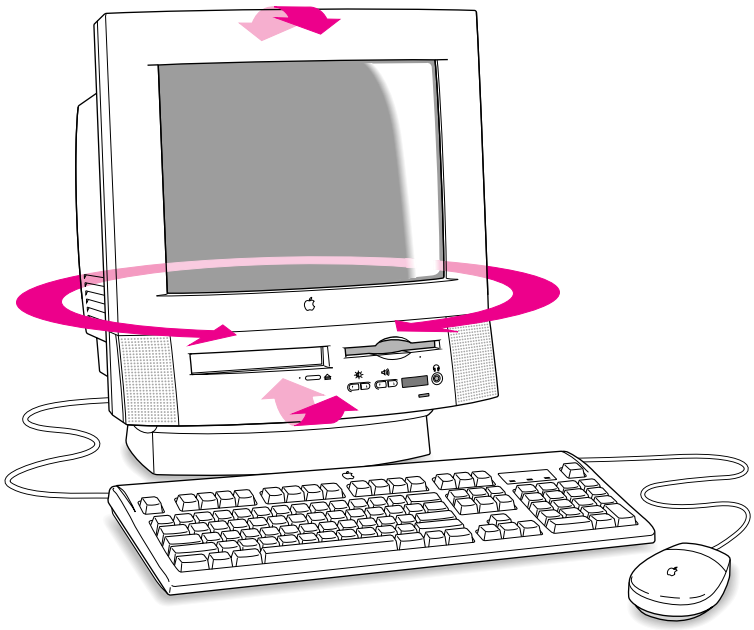
3 **If you want to adjust the keyboard angle, lower the feet on the keyboard.**



To adjust the keyboard angle, lower the feet until they snap into position.

Adjusting the angle of the screen

You can adjust the angle of the screen to avoid glare and reflections by using the computer's tilt-and-swivel base. Turn the computer to either side or tilt it slightly back or forward.



For more information on setting up your office for comfort and safety, see Appendix A, "Health, Safety, and Maintenance Tips."

Connecting other equipment

If you are new to the Macintosh, it's a good idea to get some experience using your computer before you connect other equipment, such as a printer or scanner. To learn basic Macintosh skills, continue with the instructions in this chapter.

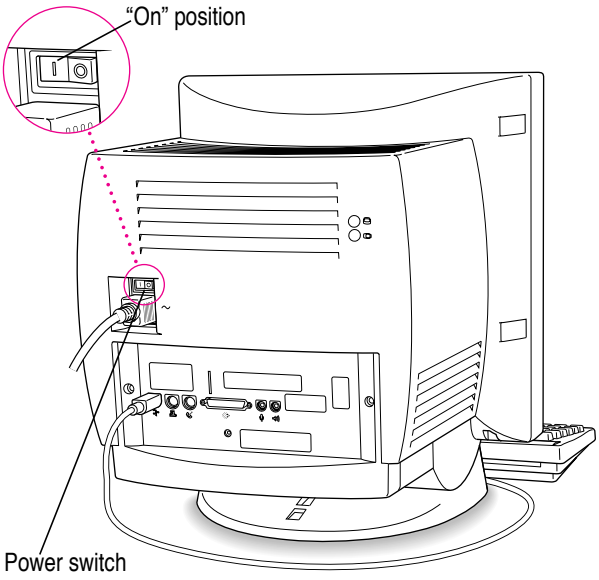
When you're ready to connect other equipment to your Macintosh, see the instructions in Chapter 3.

Turning the computer on for the first time

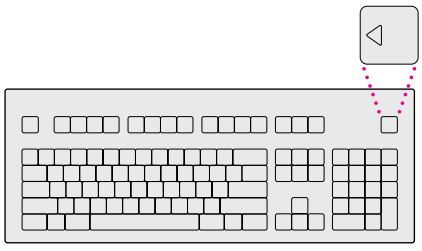
To turn the computer on for the first time, follow these steps:

1 **On the back of the computer, press the side of the power switch marked with the symbol |.**

Once you turn on the main power with the power switch, you can leave it on. From now on, you'll be starting up and shutting down your computer using the Power key on the keyboard. You only need to use the power switch on the back of the computer when you connect equipment to your computer or when you can't use the Power key for some reason.



2 **Press the Power key (marked with a triangle) on your keyboard.**

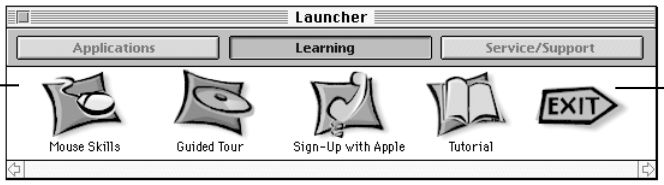


You hear a tone from the computer as it starts up.

3 **Listen to the instructions on your screen.**

You will see a "welcome screen" that gives you a choice about what to do next. You choose by clicking one of the buttons in the Launcher.

- If you don't know how to use a mouse, press the letter M on your keyboard for an on-screen program that teaches you how to use the mouse.
- If you're new to the Macintosh but familiar with how to use a mouse, click the Tutorial button to go through the Performa Tutorial, a program that teaches how to use your computer.
- If you want to learn more about the capabilities of your Macintosh (not *how* you can use the Macintosh but more about *what* the Macintosh can do), click one of the other buttons on your screen.

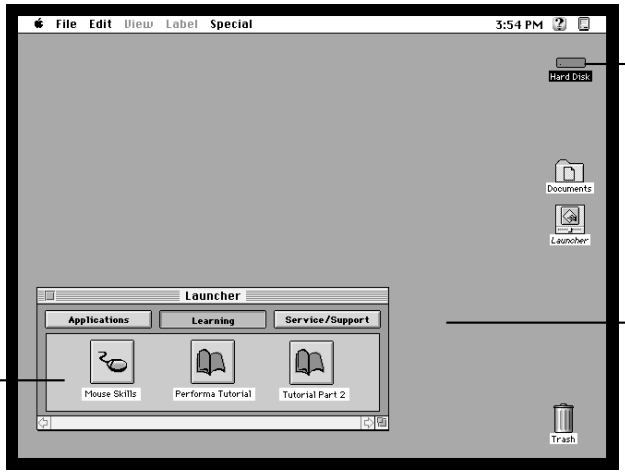


Click one of these buttons. (The buttons on your screen may be different.)

Click Exit when you're finished exploring to go to the Macintosh desktop.

4 **When you're finished exploring the items on your screen, click Exit.**

You'll see the Macintosh desktop as pictured below. Now turn to the section "What's Next?" later in this chapter.



Hard disk icon

Your Launcher has more—and perhaps different—items in it than are shown in this illustration.

Macintosh desktop, after you exit the welcome screen

If you see a blinking question mark, or nothing at all, see the next section, "Problems Starting Up?" (*Note:* Most computer screens have a slight black border around them.)

Problems starting up?

If the screen is dark, check these items to see if you can identify the problem:

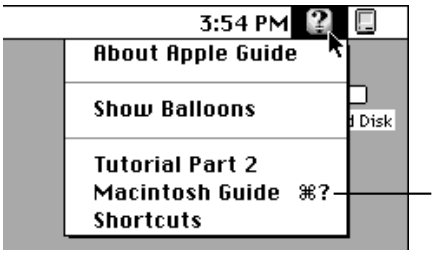
- Is the computer turned on? The power-on light on the front of the computer should be on. Make sure the side of the power switch marked with the symbol | (on the back of the computer) is pressed in.
- Is the power cord connected to the computer, and is the cord plugged into a power source?
- If the computer is plugged into a power strip, is the power strip turned on and plugged in?
- Are the keyboard and mouse cables connected correctly? (Don't disconnect the keyboard or mouse cable while the computer is on. You could damage your equipment.)
- Are the screen control buttons on the front of the computer (marked with the ☼ icon) adjusted correctly?
- If you have an external hard disk attached to your computer, is that hard disk turned on? Was it turned on before you turned on the computer? If you're not sure, turn everything off. Then turn on the external hard disk before you turn on your computer.

If you see a blinking question mark on the screen, turn to "Solutions to Common Problems" in Chapter 6.

What's next?

Congratulations! You've finished setting up your computer. Now continue with one of the following steps:

- If you are new to the Macintosh, see the next section, "Learning the Basics."
- If you are an experienced Macintosh user, turn to Chapter 2, "Getting Help," to learn about Macintosh Guide, your main source of information when you're working with the Macintosh.



What you can't find in this manual you can find in Macintosh Guide, your main source of information when you're working with your computer.

- If you want to connect your computer to other equipment, such as a printer, see Chapter 3, "Expanding Your Computer and Using Special Features."
- If you want to install application software on your computer, see Chapter 4, "Using Programs and Backing Up Disks" for information on setting up your programs and managing memory. You'll need this information to properly set up any programs specifically designed for computers with PowerPC™ microprocessors.

Before you begin working with your computer, be sure to read the important health and safety information in Appendix A.

IMPORTANT If you need to turn off your computer at any point, please see "Turning the Computer Off" later in this chapter. It is very important to use the correct procedure for shutting down your Macintosh before turning it off.

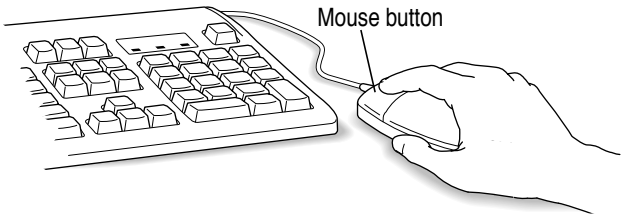
Learning the basics in the Performa Tutorials

Read this section if you haven't already gone through Mouse Skills or the Tutorial that appeared on your screen when you first turned on your computer, or if you want to go on to Part 2 of the Tutorial. These programs teach you the basic skills you need to use your computer.

To start the Performa Tutorial, Tutorial Part 2, or Mouse Skills once you are past the introductory "welcome screens," follow these steps:

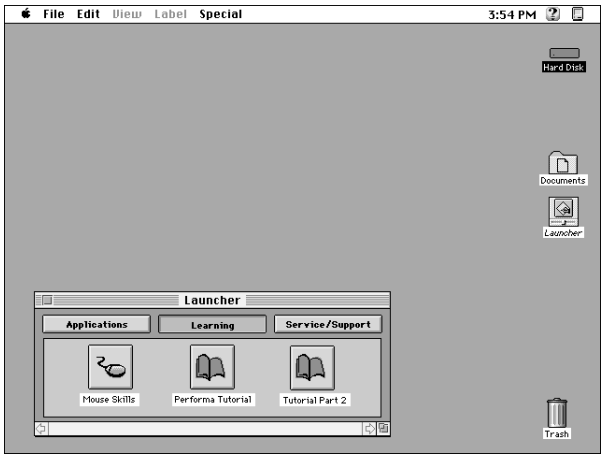
1 **Slide your mouse along your mouse pad or desk.**

Hold the mouse as shown, with the cable pointing away from you. Don't press the mouse button (under your index finger). Notice that the arrow (↖) on the screen moves in the same direction that you move the mouse.



If the arrow doesn't move, make sure that the cables connecting the mouse and keyboard are secure and that your mouse is positioned as shown in the illustration.

2 **Move the mouse so that the arrow (↖) is over the picture of the particular tutorial you want to take.**



If you don't see the Performa Tutorial, Tutorial Part 2, or Mouse Skills pictures on your screen, put the arrow on the word "Learning" and click (press and release) the mouse button.

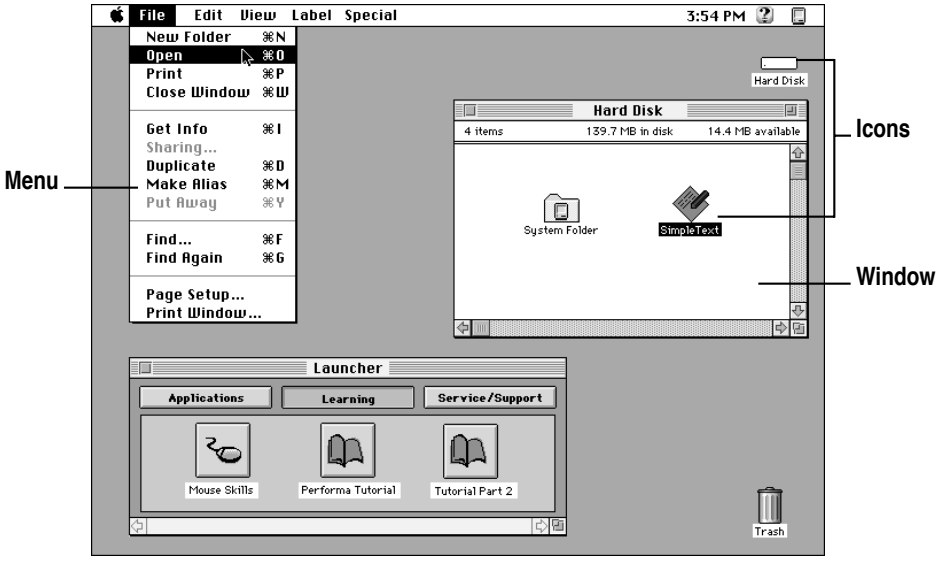
If you run out of room on your mouse pad or desk while moving the mouse, pick up the mouse and place it where there's more room. (The arrow on the screen moves only when the mouse is in contact with the mouse pad or desk.)

3 **Click the mouse button on the picture of the tutorial you want to take.**

A window appears welcoming you to the tutorial. Set this book aside for now and follow the instructions on the screen. When you have completed both parts of the tutorial, return to this book.

Reviewing the basics

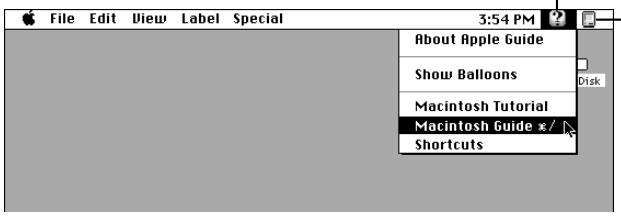
You can use the following illustrations to review the elements you use on your screen to do work with your computer.



Menus

The strip across the top of the screen is called the menu bar. The symbols and words in it represent menus of commands. To open a menu, place the pointer on the symbol or word for the menu and press the mouse button.

Guide menu
To find an answer to a question, look in the Guide (?) menu.



Application menu
You can have several applications open at once. To see which program is active or to switch from one program to another, use this menu (called the Application menu).

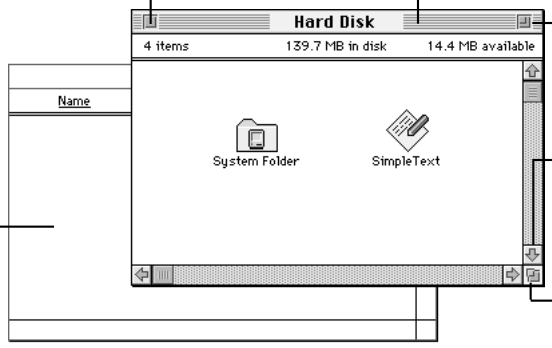
Icons

Icons are small pictures that represent disks, programs, documents, and folders. You can double-click any icon to open it and see what it contains.

Hard Disk	This icon represents your computer's internal hard disk.
Application	Icons like this one represent application programs, which you use to create documents and do other work.
Document	Icons like this one represent documents, which you can create and edit.
Folder	Icons like this represent folders. A folder contains other icons.
Trash	To throw away an item you no longer want, drag it to the Trash icon and choose Empty Trash from the Special menu.

Windows

Windows are boxes that display text, graphics, or icons. To change the shape or position of a window, or to close the window, use the elements shown here.



Close box
To close a window, click the close box.

Title bar
To move a window, drag it by the middle of the title bar (anywhere in the bar except the small box on each end).

Zoom box
To make the window bigger, click once here. Click again to return the window to its original size.

Scroll arrow
To bring hidden portions of a window's contents into view, click one of the four scroll arrows.

Size box
To change the shape or size of a window, drag the size box.

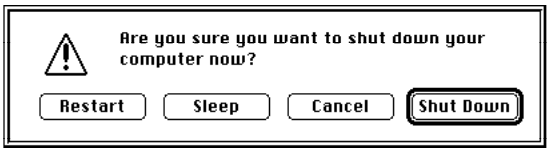
To bring a partially covered window to the front, click anywhere in it.

Turning the computer off

To turn the computer off using the Power key on the keyboard, follow these instructions:

1. **If the computer is in sleep mode, press the Power key (or any other key on the keyboard except Caps Lock) to wake it.**
2. **Press and hold the Power key on the keyboard for about 2 seconds.**

   The following dialog box appears on the screen:



3. **Press the Return key on the keyboard (or click the Shut Down button in the dialog box).**

You can also turn off your computer by choosing Shut Down from the Special menu. Detailed instructions follow.

1. **Move the tip of the arrow to the Special menu at the top of the screen.**
2. **With the tip of the arrow on the word "Special," press and hold down the mouse button.**
3. **While holding down the mouse button, move the arrow down the list of choices until the words "Shut Down" are highlighted, then release the mouse button.**

If you can't shut down your computer

If a problem with the computer prevents you from using the Power key on the keyboard or choosing Shut Down—for example, if the computer "freezes" so that the pointer does not respond to the mouse—you can turn off the computer by pressing the power switch on the back of the computer. Use this method only if you cannot choose Shut Down or press the Power key following the instructions in the previous section, "Turning the Computer Off."

IMPORTANT You could lose unsaved work if you use the power switch on the back of the computer to turn off your computer. Only use the power switch when there is a problem that prevents the computer from being turned off with the Power key on the keyboard or the Shut Down command. To make sure your work is saved, use the Power key on the keyboard or the Shut Down command.

Turning the computer on

To turn on the computer after you've shut it down (using either the Power key on the keyboard or the Shut Down command):

- **Press the Power key (marked with a triangle) on the keyboard.**

Leave the power switch on the back of your computer in the "on" position. (The side of the switch marked with the | symbol should be pressed in.)

Where to find answers

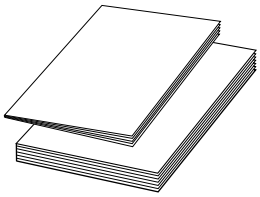
When you have questions about using your Macintosh, there are several places you can look for answers.

In this book

Use this book to help you set up your computer and learn about it, or to find solutions to problems with your equipment.

In the Guide menu

The Guide menu (marked with the ? icon) is your main source of information about the Macintosh. To learn how to get different kinds of help from the Guide menu, see Chapter 2 in this book.



In other manuals

Some of the programs that already came installed on your computer have separate manuals. Most of these manuals came in the box with your computer. Some come online. (You can find them as clickable buttons in the Applications section of the Launcher.) For answers to questions about other equipment or about application programs you have purchased, see the manuals that came with the equipment or programs.

From the Read Me files in the Apple Extras folder

The Apple Extras folder (in your System Folder) on your hard disk contains SimpleText documents, called About Apple Extras with important information about some of the application programs included with your computer. Similar files called Read Me files can also be found inside application folders and in the Documents folder on your desktop.

From Apple's customer support hotline

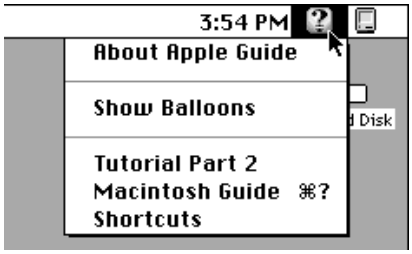
If you can't find an answer in any of the materials provided, call the customer support hotline. The phone number for the hotline is in the service and support information that came with your computer.

Note: If you have problems with an application program not published by Apple, call the program's publisher. Click the Phone Numbers button in the Service/Support area of the Launcher to get a software publisher's phone number.

Use the instructions in this chapter to learn about the help available to you in the Guide menu.

2 Getting Help

The Guide menu is your main source of information when you're working with your computer. The menu is identified by a question mark (?) in the upper-right corner of the screen.



Getting answers to your questions

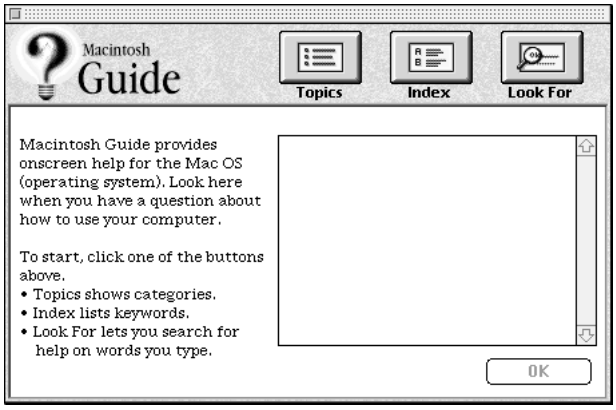
When you have a question while working with your computer, you can get the answer by choosing Macintosh Guide from the Guide menu.

1 **Pull down the Application menu (in the upper-right corner of the screen) and choose Finder to make it the active application program.**

A checkmark in the menu indicates that the Finder is the active program.

2 **Pull down the Guide menu (marked with the ? icon) and choose Macintosh Guide.**

The Macintosh Guide window appears.



Whenever you use Macintosh Guide, its window remains in front of other windows. If the window gets in your way, you can move it by dragging its title bar (the gray bar across the top of the window).

3 **Notice the three buttons at the top of the window: Topics, Index, and Look For.**

Macintosh Guide gives you three ways of finding information:

- **Topics** lets you choose from a list of general subjects; it is like the table of contents in a book.
- **Index** lets you choose from an alphabetical list of more specific subjects; it is like the index in a book.
- **Look For** lets you search for information related to a specific word or phrase that you type.

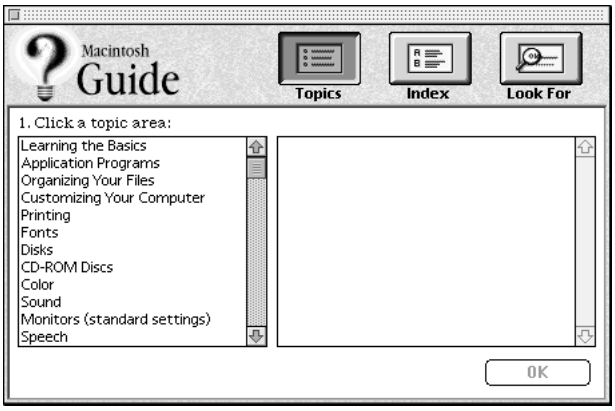
In the following sections you will practice using each method.

If you have problems while using Macintosh Guide, see "Tips for Using Macintosh Guide" later in this chapter.

Getting answers with the Topics button

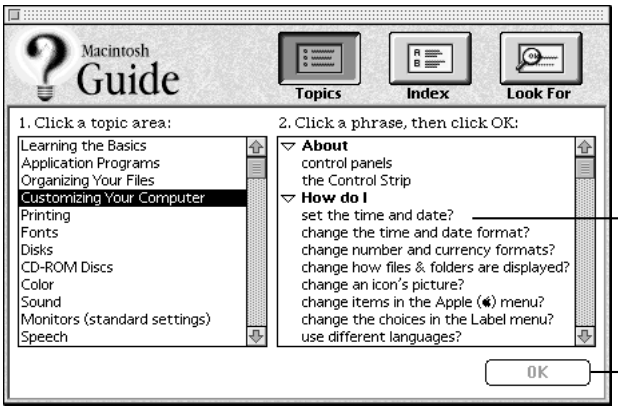
1 **In the Macintosh Guide window, click the Topics button.**

A list of general topics appears on the left side of the Macintosh Guide window. (Depending on the hardware and software you have, the list of topics may look different.)



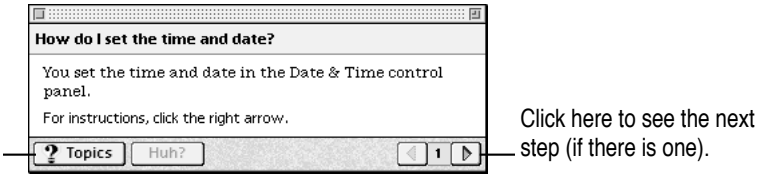
2 **In the list of topics, click “Customizing Your Computer.”**

When you click any topic area, a list of related questions appears on the right side of the Macintosh Guide window.



3 **Click the question “How do I set the time and date?” and then click OK. Or double-click the question.**

A small window appears with instructions for you to follow.



4 **Read and follow the instructions in this window.**

Macintosh Guide provides step-by-step instructions to answer the question you selected. When you have completed each step, click the right arrow in the lower-right corner to see the next step.

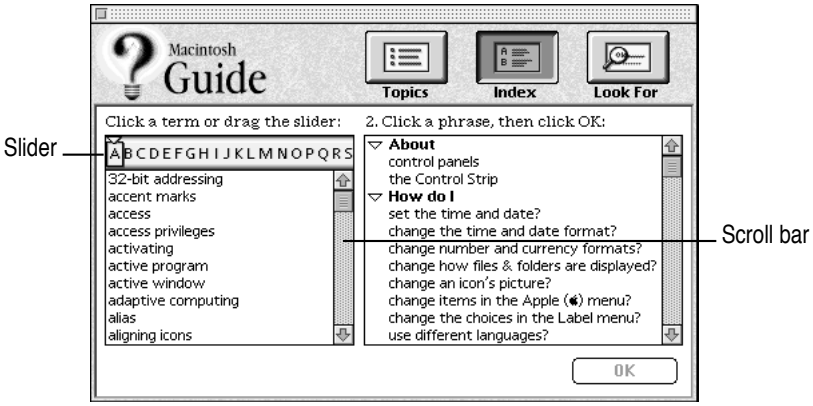
5 **When you have completed all the steps, click the Topics button in the lower-left corner to return to the main Macintosh Guide window.**

Now continue with the next section.

Getting answers with the Index button

1 **In the Macintosh Guide window, click the Index button.**

An alphabetical list of subjects appears on the left side of the window.

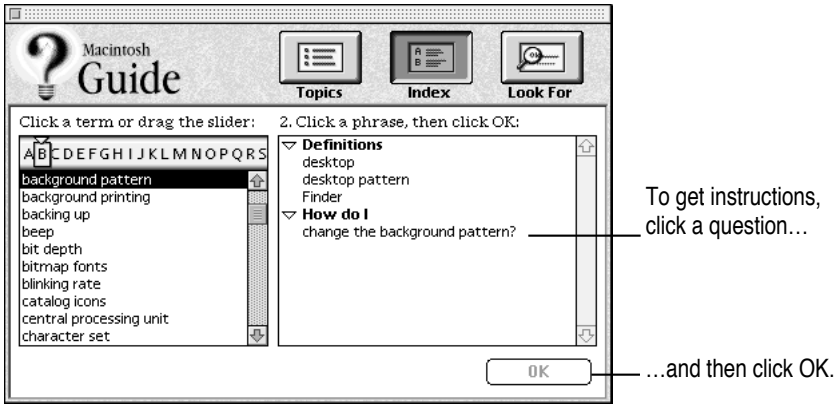


2 **Scroll through the alphabetical list until the phrase "background pattern" is visible.**

You can scroll through the list either by dragging the slider to the letter *B* or by using the scroll bar at the right of the list.

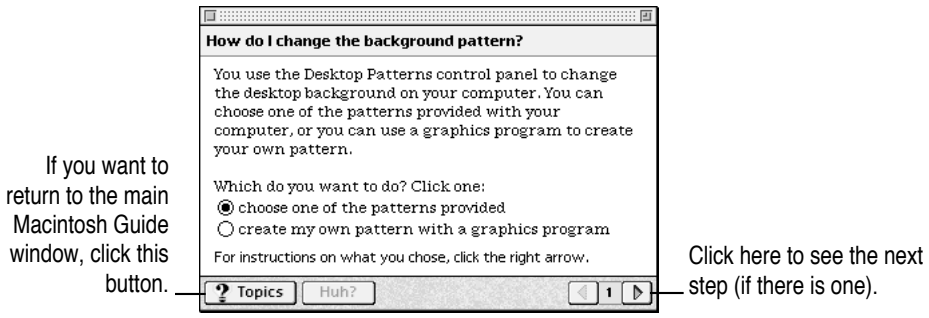
3 **Click the phrase "background pattern" in the alphabetical list.**

When you click any index entry, a list of related questions appears on the right side of the Macintosh Guide window.



4 **Click the question “How do I change the background pattern?” and then click OK. Or double-click the question.**

A small window appears with instructions for you to follow.



5 **Read and follow the instructions in the window.**

Macintosh Guide provides step-by-step instructions to answer the question you selected. When you have completed each step, click the right arrow in the lower-right corner to see the next step.

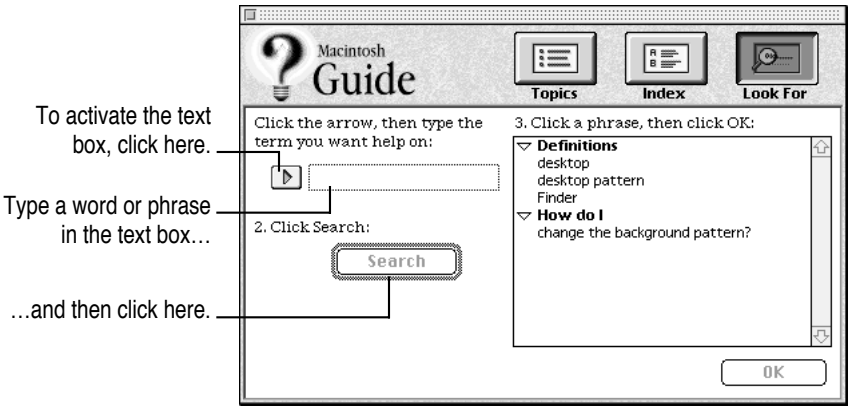
6 **When you have completed all the steps, click the Topics button in the lower-left corner to return to the main Macintosh Guide window.**

Now continue with the next section.

Getting answers with the Look For button

1 **In the Macintosh Guide window, click the Look For button.**

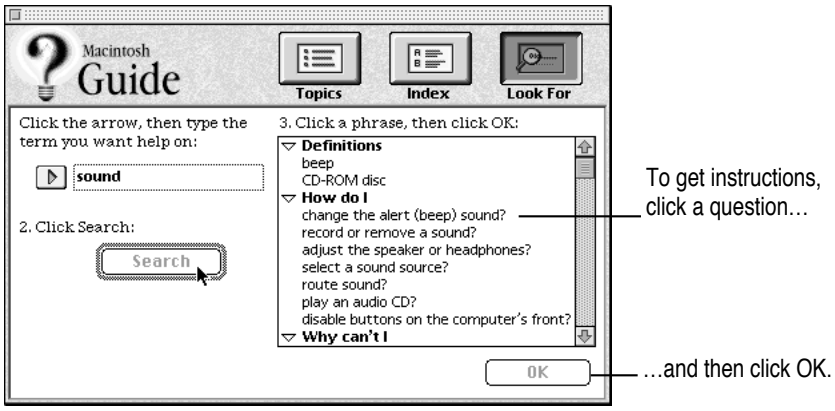
A small box appears on the left side of the window, where you can type text.



2 **Click the arrow button to activate the text box.**

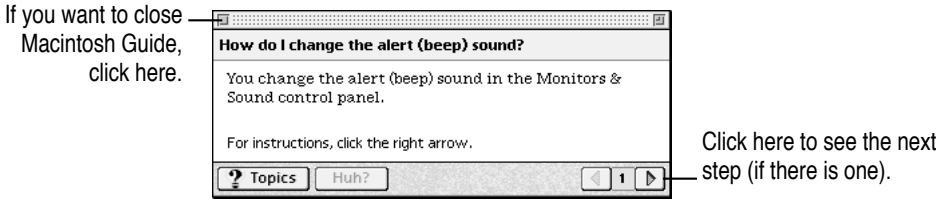
3 **Type “sound” in the text box and then click Search.**

When you click Search, a list of questions related to the word or phrase you typed appears on the right side of the Macintosh Guide window.



4 **Click the question “How do I change the alert (beep) sound?” and then click OK. Or double-click the question.**

A small window appears with instructions for you to follow.



5 **Read and follow the instructions in the window.**

Macintosh Guide provides step-by-step instructions to answer the question you selected. When you have completed each step, click the right arrow in the lower-right corner to display the next step.

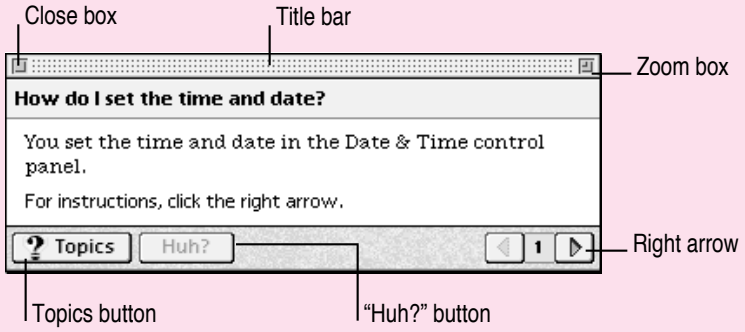
6 **When you have completed all the steps, click the close box in the upper-left corner to close Macintosh Guide.**

Tips for using Macintosh Guide

Here are a few tips for using Macintosh Guide effectively:

- Macintosh Guide is available only when you are in the Finder—the desktop area where you can see the icons of disks, folders, and files. (Other programs may also have help available in the Guide menu, however.) If you don't see Macintosh Guide in the Guide menu, pull down the Application menu (to the right of the Guide menu) and choose Finder.
- Follow the steps when you're instructed to; don't skip ahead or read ahead. That way the computer can check to make sure you've done a step correctly.
- Unlike most windows, the Macintosh Guide window stays in front of other windows on the screen so that your instructions are never covered. If you need to move the Guide window out of the way, drag it by the title bar at the top of the window.

  You can also move the window out of the way by clicking the zoom box. Click the box once to shrink the window; click it a second time to expand the window to its original size.
- If you need more information about an instruction or a term, click the button labeled "Huh?" to get further explanation. (The "Huh?" button is dimmed when no additional information is available.)
- If you want to return to the main Macintosh Guide window, click the Topics button in the lower-left corner of the Guide window.
- When you're finished using Macintosh Guide, click the close box in the upper-left corner of the window.



Identifying what's on your computer screen

Sometimes you'll see an unfamiliar item on the screen and ask yourself, "What's that?" You can get an answer by using a Macintosh feature known as Balloon Help.

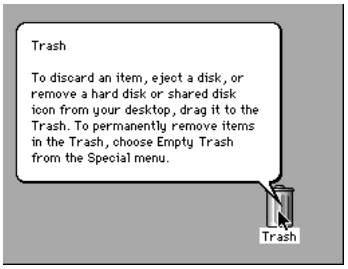
Balloon Help explains the function of icons, menus, commands, and other items on the Macintosh screen in balloons like those you see in comic strips.

Follow these steps to use Balloon Help:

1 **Pull down the Guide menu (marked with the ? icon) and choose Show Balloons.**

2 **Point to any object on the screen that you want to identify.**

A balloon appears next to the object. In the following illustration, for example, pointing to the Trash displays a balloon that explains how to use the Trash to throw items away.



Although balloons appear next to items when you point to them, the way you work does not change; you can still select icons, choose commands, and so on.

3 **When you're finished using Balloon Help, choose Hide Balloons from the Guide menu.**

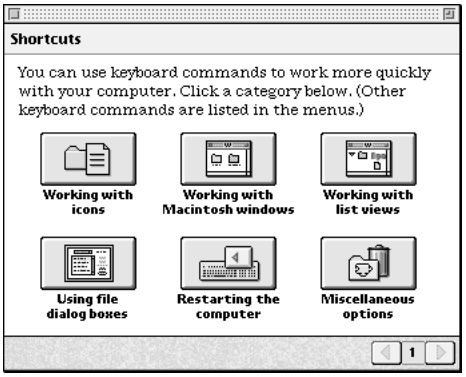
Learning useful shortcuts

You can perform many tasks in the Finder more quickly if you use keyboard or mouse shortcuts. For example, instead of clicking an icon and choosing Open from the File menu, you can simply double-click the icon to open it.

Follow these steps to learn keyboard and mouse shortcuts:

1 **Pull down the Guide menu (marked with the ? icon) and choose Shortcuts.**

The main Macintosh Shortcuts window appears.

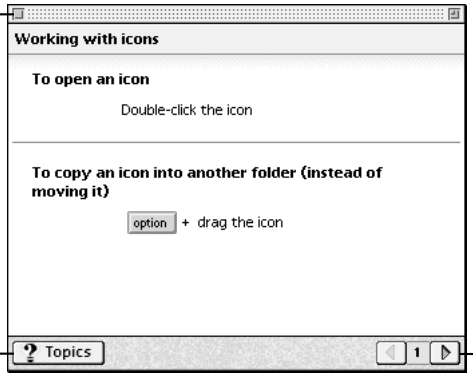


2 **Click one of the category buttons.**

Another window appears, describing shortcuts for that category.

If you want to close the window, click here.

Click the Topics button to return to the main Macintosh Shortcuts window for more categories.



Click here to see the next window (if there is one).

3 **Read about the shortcuts available for the category you selected.**

Click the right arrow in the lower-right corner of the window to display the next window (if there is one).

4 **When you finish reading about the shortcuts for your category, click the Topics button in the lower-left corner to return to the main Macintosh Shortcuts window. Or click the close box in the upper-left corner to close the window.**

Read this chapter for information on expanding your computer system with additional hardware and using special features of your computer.

3 Expanding Your Computer and Using Special Features

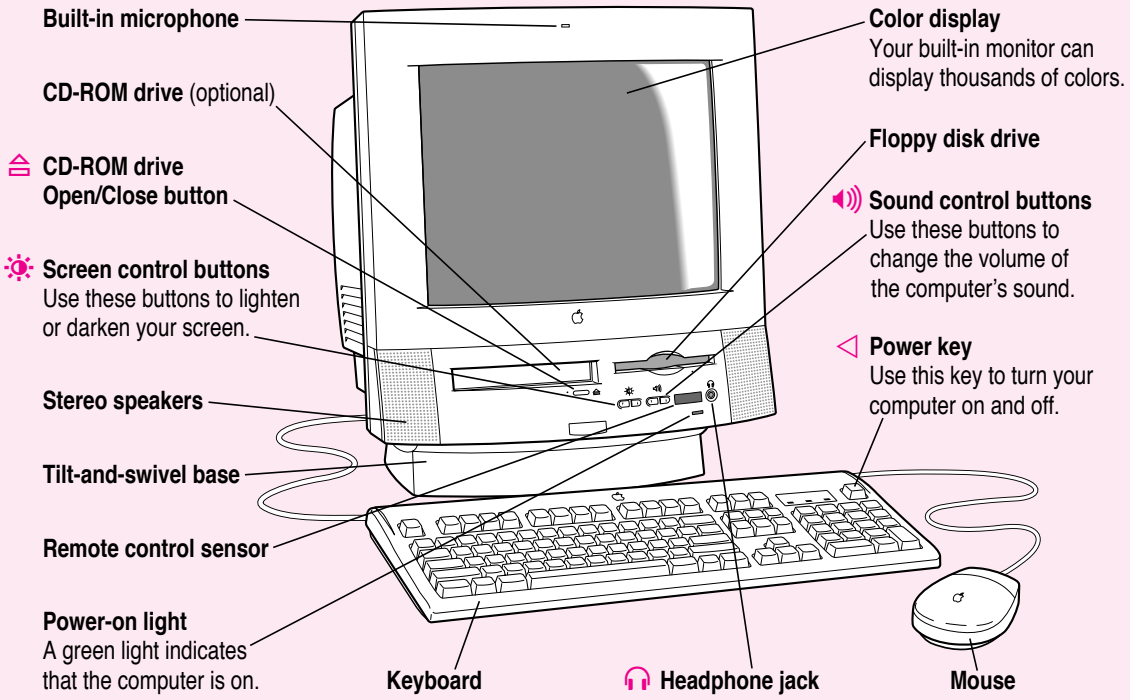
Read this chapter to learn how to connect additional equipment to your Macintosh. You can expand your computer system by connecting additional hardware (such as a printer, modem, or scanner) or by connecting to a network.

For instructions on connecting equipment such as a printer, modem, or scanner, see the manuals that came with the equipment.

Also read this chapter to learn about some of the special features of your Macintosh:

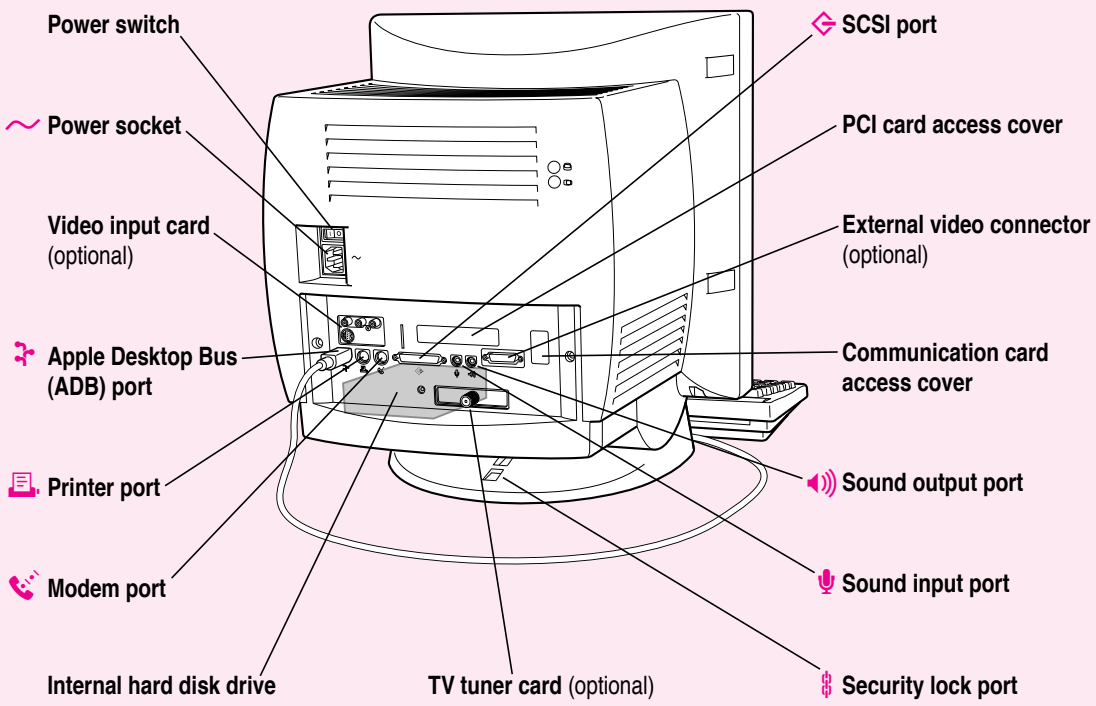
- using the sound control buttons
- using the screen control buttons
- using the built-in microphone

WARNING Before you connect any equipment—such as a mouse, keyboard, or external SCSI device—to your computer, make sure that your computer is plugged in (in order to ground the computer) and turned off. If you connect equipment with the computer turned on, you can damage your computer and your equipment.



Ports and connectors on the back of your computer

Video input card (optional)	Connects your Macintosh to a video input source, such as a video camera, VCR, or other video equipment.
Apple Desktop Bus (ADB) port	Connects your Macintosh to an input device, such as a keyboard or a trackball.
Printer port	Connects your Macintosh to a printer, LocalTalk network, or GeoPort devices, such as the GeoPort Telecom Adapter and the QuickTake 150 digital camera.
Modem port	Connects an external modem or GeoPort devices, such as the GeoPort Telecom Adapter and the QuickTake 150 digital camera to your Macintosh. (*Note:* If your computer has an internal modem, this port is covered. Don't remove the cover or connect anything to this port if you have an internal modem.)
TV tuner card (optional)	Allows you to watch TV on your Macintosh by connecting your computer to an external TV antenna or cable TV service. (*Note:* The TV tuner card on your computer, if you have the card, may look different.)
SCSI port	Connects your Macintosh to SCSI equipment, such as external hard disk drives and scanners.



PCI card access cover
Covers port for optional 6.88-inch long PCI (peripheral component interconnect) slot expansion card, such as a video editing card.

External video connector (optional)
Connects your Macintosh to a presentation system or a second monitor for video mirroring.

Communication card access cover
Covers port for optional communication card, such as an Ethernet card or internal modem card. (You may have an internal modem card installed here already.)

Sound output port
Connects your Macintosh to sound output equipment, such as externally powered (amplified) speakers.

Sound input port
Connects your Macintosh to an audio input source, such as a compact disc or audio cassette player.

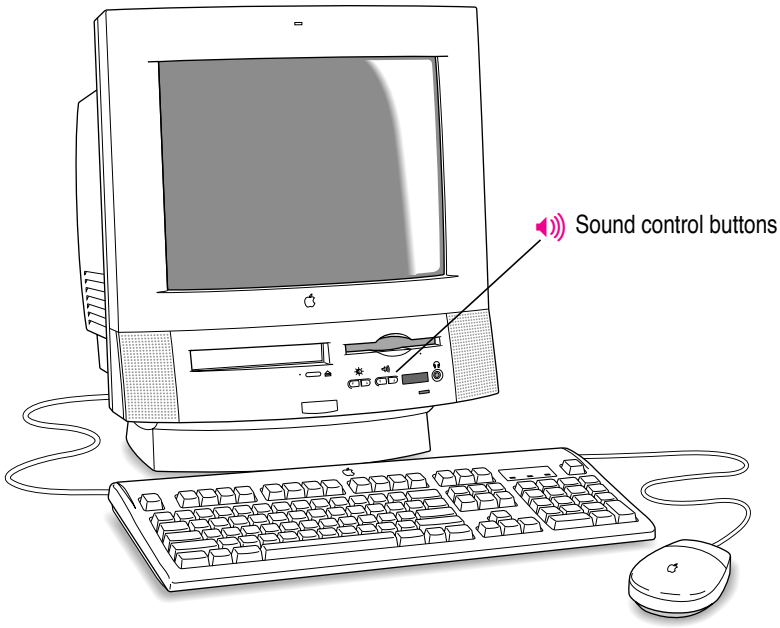
Security lock port
Enables you to attach a security lock to your Macintosh (for example, to secure the computer to your desk). See your computer products retailer for security lock devices that work with your computer.

Using the sound control buttons on your computer

There are two sets of buttons on the front of your Macintosh. The set on the right (marked with the icon) is for sound control. You can use these buttons to increase or decrease the volume of the sound your Macintosh plays:

- Press the button on the right to make the sound louder.
- Press the button on the left to make the sound softer.

You can also adjust the sound by using the Monitors & Sound control panel, in the Control Panels folder in the Apple () menu. Your computer also comes with "surround sound" technology, which is enabled in the Monitors & Sound control panel. The SRS 3D Surround Sound technology broadens the sound you hear through your monitor's speakers. 3D Surround Sound makes the speakers sound as if they are set wider apart, and you can hear many "points" of sound. (3D Surround Sound does not work through the headphone jack on the front of the computer.)

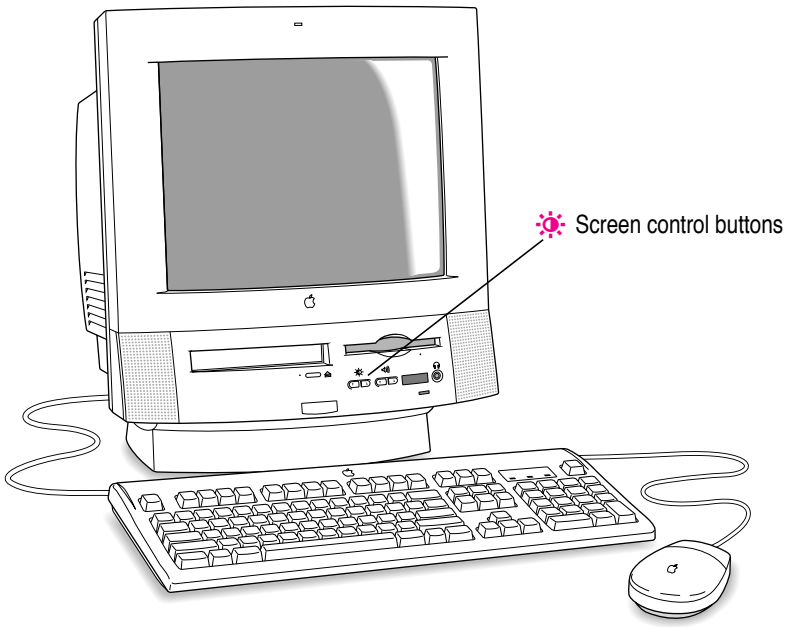


For more information about adjusting sound, see the "Sound" topic of Macintosh Guide, available in the Guide (?) menu.

Using the screen control buttons on your computer

You can adjust the level of light and dark on the screen of your built-in monitor by using the screen control buttons on your computer (marked with the ☼ icon).

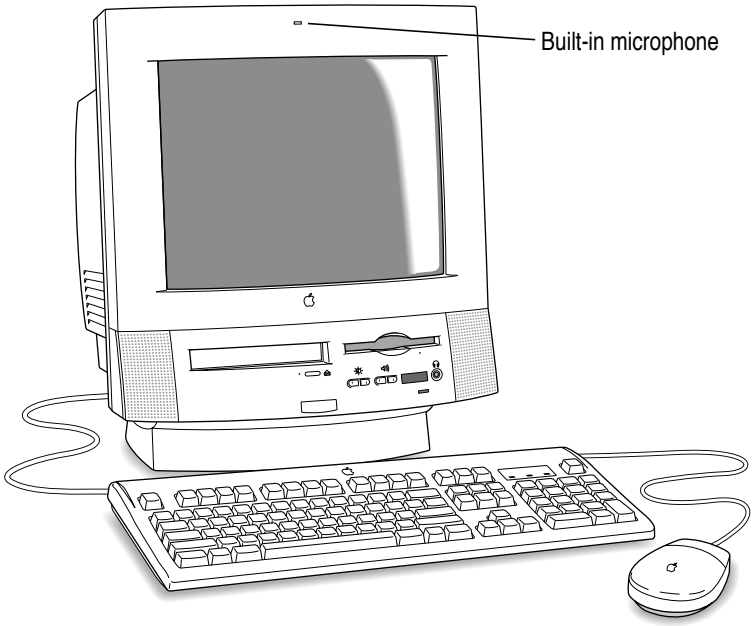
- Press the button on the right to lighten your screen.
- Press the button on the left to darken your screen.



You can also use the Monitors & Sound control panel, in the Control Panels folder in the Apple (🍎) menu, to control the level of light and dark on the screen. You can also use this control panel to adjust the resolution and color depth displayed on your monitor. For more information, see the "Monitors (standard settings)" topic of Macintosh Guide, available in the Guide (?) menu.

Using the built-in microphone

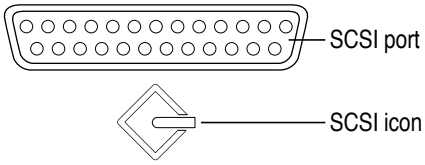
Your Macintosh comes with a built-in microphone for recording live sounds. The microphone is highly sensitive. Once you've turned it on (which you do with a sound-recording application program), it can pick up sounds within a range of several feet. For information on recording sound, see the "Sound" topic of Macintosh Guide, available in the Guide (?) menu.



WARNING Do not stick any small objects into the built-in microphone. Doing so may damage your equipment.

Connecting external SCSI devices (such as a scanner or external hard disk)

Your computer has a port for connecting devices that use the Small Computer System Interface (SCSI, pronounced “skuh-zee”). SCSI devices commonly used with the Macintosh include hard disk drives, CD-ROM drives, scanners, some printers, and tape or cartridge backup drives. The SCSI port permits high-speed communication between the computer and the device. The SCSI icon appears below the port on the computer’s back panel.



You can connect SCSI devices to the SCSI port in a chain. The first device in the chain plugs into the SCSI port; the second device plugs into the first device, and so on. You can attach up to six external SCSI devices to the SCSI port. All SCSI devices connected to this chain must have their own unique ID number (no two devices can use the same ID number). If your computer came with the optional CD-ROM drive installed, this drive is also part of the SCSI chain and uses SCSI ID number 3. The computer itself (the main logic board) uses SCSI ID number 7.

IMPORTANT “Before You Connect a Device” and “Connecting a SCSI Device,” both later in this chapter, contain general instructions for attaching SCSI devices to your computer. Also follow the specific instructions that came with your external hard disk drive or other SCSI device when connecting the device to your Macintosh.

Before you connect a device

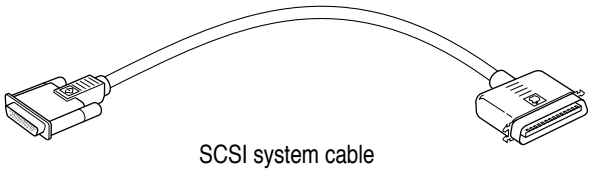
Before you connect a SCSI device to your Macintosh, be sure to complete these tasks:

- Make sure each SCSI device connected to your Macintosh has its own, unique ID number from 0 to 6. The computer itself (the main logic board) has ID number 7 and the internal CD-ROM drive has the ID number 3, making ID numbers 0, 1, 2, 4, 5, and 6 available for additional SCSI devices. Make sure other SCSI devices you add to the chain do not use ID numbers 3 or 7. See the instructions that came with each SCSI device for information on checking and setting its SCSI ID number.

IMPORTANT If you use two or more devices attached to the same SCSI interface with the same ID number, your equipment could malfunction and you could lose data as a result.

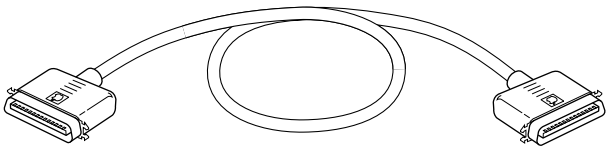
- Make sure you have the appropriate cable for attaching the SCSI device to your Macintosh.

  If the device is the first or only one you're connecting, use a SCSI system cable to connect it to the computer's SCSI port:



SCSI system cable

  If the device is not the first one, use a SCSI peripheral interface cable to connect it to the last device in the chain:



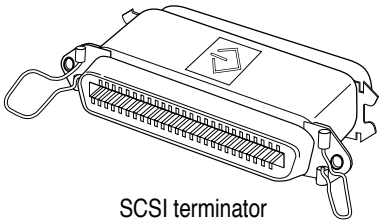
SCSI peripheral interface cable

IMPORTANT The total length of the cables in a SCSI chain should not exceed 6 meters (20 feet). SCSI cables must have a 110-ohm impedance. For best results, use SCSI cables manufactured by Apple Computer.

- Make sure that the last (or only) device in the SCSI chain has a terminator. Make sure that no other external SCSI device has a terminator.

  To ensure accurate transmission of information, a terminator must be at each end of a SCSI chain. Your computer's main logic board, which is the first device in the chain, has a built-in terminator.

  Some external SCSI devices from manufacturers other than Apple have built-in terminators. (Check the information that came with the device.) If the device at the end of the SCSI chain does not have a built-in terminator, you need to attach an external terminator.



SCSI terminator

If your SCSI device has a built-in terminator, use it as your last device in the chain or have your Apple-authorized service provider remove the extra built-in terminator. You can attach or remove external terminators yourself.

Connecting a SCSI device

Use these general instructions in conjunction with the instructions that came with your SCSI device:

1 **Turn off your Macintosh.**

2 **Make sure the SCSI device is switched off.**

WARNING Do not connect or disconnect any device while the device or your Macintosh is turned on. Doing so could damage the device, your computer, or both.

3 **Use a SCSI cable to connect the device either to the computer's SCSI port or to the last SCSI device already in the chain.**

IMPORTANT Make sure that the last (or only) device in the SCSI chain has a terminator and that no other external SCSI device has a terminator. Otherwise, the computer may not be able to start up. (See the previous section, "Before You Connect a Device.")

4 **Turn on all devices in your SCSI chain.**

IMPORTANT Always turn on any external SCSI devices connected to your Macintosh before turning on the computer itself. Otherwise, your computer won't be able to recognize that the SCSI devices are connected to it and your computer may not be able to start up.

5 **Install any necessary device drivers (software that makes a device work with your computer).**

Drivers needed for a SCSI device usually come on a floppy disk with the device. (If no drivers come with the device, contact the device manufacturer.)

Note: If you experience problems after connecting a SCSI device, see the troubleshooting information in Chapter 6 for possible solutions.

Expanding memory

For information on increasing your computer's memory, see Appendix E, "Installing Additional Memory."

Adding an Ethernet card or a second monitor

If you purchase an Ethernet card or another monitor for your computer, see Appendix D, "If You Purchase Additional Equipment," for more information.

Replacing internal storage devices

Your Macintosh comes with three internal storage devices—a floppy disk drive, a hard disk drive (several capacities are available), and a CD-ROM (compact disc read-only memory) drive. If you want to replace any of these internal drives, see your Apple-authorized dealer.

Read this chapter to learn how to work with application programs and protect the information on your disks.

4 Using Programs and Backing Up Disks

Your computer came with several application programs already installed. You can open these programs by clicking their buttons in the Launcher.

Backup copies of all your computer's preinstalled application programs exist on the *Macintosh Performa CD: Performa Software* that came with your computer. This CD also contains additional programs that you can copy to your hard disk.

IMPORTANT To prevent performance problems with your computer, install only those programs from the *Macintosh Performa CD: Performa Software* that you really need and remove the ones you installed from the CD but no longer use.

For information on using the programs on the *Macintosh Performa CD: Performa Software,* see any Read Me files that may accompany them on the CD. For information on where on your CD you can find these programs, see the section "Copying Files From the CD to Your Hard Disk" in Chapter 7.

The Apple Extras folder on your hard disk also contains some programs. One of these is *Apple Video Player,* which lets you watch video or TV on your computer. However, although the application is already installed, to actually watch video on your computer you need to install a video input card. Similarly, to watch video and TV, you need to install both a video input card and a TV tuner card. Some computers come with these cards already installed. (Your computer has these cards installed if you find the Apple video or TV manuals in the box that came with your computer.) If you don't have these cards installed, you can purchase them from an Apple-authorized dealer.

Installing application programs

You may want to buy and install additional application programs. See the manuals you receive with these programs for instructions on installing and using them.

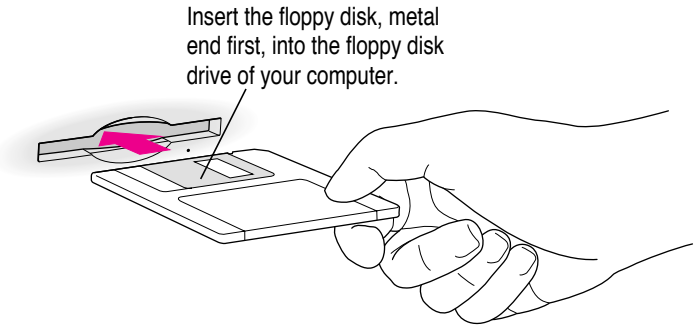
To use your programs most effectively, follow these guidelines:

- Read the manuals you received with the program if you have problems using it.
- Put only one copy of each program on your hard disk. Having more than one copy can cause errors.
- Whenever you copy a program disk to your hard disk, be careful not to copy a System Folder.
- If a program malfunctions consistently, try installing a fresh copy. If that doesn't help, find out from the software manufacturer whether your version of the program is compatible with your computer model and the system software you're using.

To put a program into the Launcher, simply drag the program's icon (or its alias) into the Launcher window or onto the Applications category button in the Launcher. (If you need further instructions, see the "Tips & Features" topic of Macintosh Guide, available in the Guide [?] menu, and select "How do I use the Launcher?")

Installing programs from a floppy disk

In most cases, you'll install an application program on your internal hard disk from floppy disks that contain the program. The following illustration shows how to insert a floppy disk into your computer's floppy disk drive.



For instructions on how to eject floppy disks, see the "Disks" topic of Macintosh Guide, available in the Guide (?) menu.

Installing programs from a CD-ROM disc

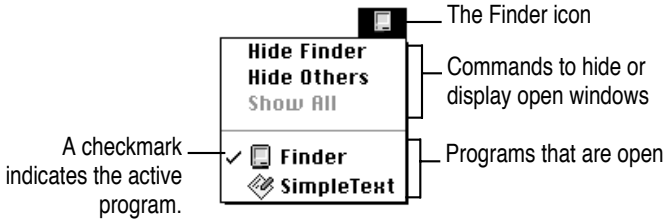
Sometimes you'll install an application program on your internal hard disk from a CD-ROM disc that contains the program. (For instructions on inserting and ejecting CD-ROM discs, see "Inserting a CD-ROM Disc" and "Ejecting a CD-ROM Disc" in Chapter 5.)

IMPORTANT Never copy an entire CD-ROM disc to your hard disk. (Don't drag the CD-ROM disc's icon to your hard disk.) When you open programs on some of the CD-ROM discs that came with your computer, you may get a message telling you to copy or install the program onto your hard disk. If you get this message, double-click the CD-ROM disc's icon to open it, and then copy the CD-ROM disc's program to your hard disk. Look for any "read me" or "information" files on the CD-ROM disc for instructions. Copying the CD-ROM disc itself will take up a lot of memory on your hard disk.

Working with several programs at a time

You can open as many application programs and desk accessories as your computer's memory allows.

All open programs are listed in the Application menu at the right end of the menu bar. You can find out which program is active and which other programs are open by pulling down the Application menu. The name of the active program (the one you're using right now) has a checkmark next to it, and its icon appears in the menu bar.



Switching programs

You can switch to another open program or desk accessory by choosing its name from the Application menu.

If a program's icon is dimmed in the Application menu, that means its windows are hidden. Choosing the program from the menu displays its windows.

You can also switch to another program by clicking in a window that belongs to an open program, by double-clicking a program icon, or by double-clicking the icon of a document that was created with the program.

Hiding and showing windows on the desktop

You can hide all windows except those of the active program by choosing Hide Others from the Application menu.

The other programs remain open even though their windows are hidden. When you switch to another program, its windows become visible again.

If you want to see all the open windows, choose Show All from the Application menu.

Increasing memory available to run applications

A computer function called virtual memory allows you to open several applications and windows at the same time by creating extra random-access memory (RAM) on your computer's hard disk. Virtual memory, however, can also result in slightly slower performance. See the "Memory" topic of Macintosh Guide, available in the Guide (?) menu, for more information.

IMPORTANT Your computer comes with virtual memory turned off. You shouldn't use virtual memory unless you need to keep several applications open at once, and you should turn it off when you no longer need it. You can turn virtual memory on or off by using the Memory control panel in the Control Panels folder in the Apple (🍎) menu.

Protecting the information on a disk

When you have a valuable document like a birth certificate, you probably make an extra copy of it for safekeeping. Similarly, you should make a copy of the documents you create on your computer. The extra copy is called a *backup*, and the process of making the copy is called *backing up*.

Once you have a backup, you're protected from accidentally losing the information on your hard disk. In the unlikely event that something happens to your hard disk, you can easily get the information back.

Making backup copies of your documents

- You should *regularly* make copies of the documents you create.
- You can back up files stored on your hard disk by copying them to floppy disks.
- You can back up an entire floppy disk by copying it to another floppy disk of the same capacity or larger, or by copying it to a hard disk.
- If a file is too large to fit onto a single floppy disk, you need to use a commercial backup program to copy the file onto multiple floppy disks.
- You can use a commercial backup program to copy new and changed files from a hard disk to another hard disk, to a tape drive, or to a series of floppy disks.
- If your computer is on a network, you may be able to back up files by copying them to a shared disk on the network.

Restoring the information on your hard disk

Your computer's hard disk comes with valuable information already stored on it, including system software and some application programs. If information on your hard disk becomes damaged or lost, you can restore it if you have a backup copy of the information. The *Macintosh Performa CD: Performa Software* contains copies of all the system software and application programs that came with your computer. (The *Macintosh Performa CD: Guided Tour* also contains backup copies of the Guided Tour programs you may have seen when you first turned on your computer.) See Chapter 7, "Installing or Reinstalling Your Software," for instructions on using the *Macintosh Performa CDs* to reinstall software.

Using application programs designed for the PowerPC microprocessor

Your Macintosh is compatible with most application programs intended for use with Macintosh computers. But certain programs are designed especially for use with computers that have the PowerPC microprocessor. (These programs are sometimes called "native" applications.) You'll find that these programs take best advantage of your computer's speed.

Special memory requirements

Some native applications may be slightly larger than other programs and may take up more memory. If you find that you are running out of memory when you use one of these programs, you can use space on your computer's hard disk as additional memory. For instructions on how to use hard disk space as memory, see the "Memory" topic of Macintosh Guide, available in the Guide (?) menu.

You can also add more memory to your computer, as described in Appendix E, "Installing Additional Memory."

Using older Macintosh programs

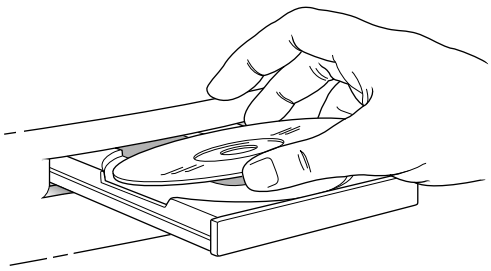
If you experience problems using an older Macintosh program, it may be incompatible with your Macintosh. You may be able to use your older program if you turn off Modern Memory Manager in your Memory control panel, in the Control Panels folder in the Apple (apple) menu.

Read this chapter for information about your computer's built-in CD-ROM drive.

5 Using the Built-in CD-ROM Drive

This chapter provides information on the CD-ROM drive (also called a CD-ROM player). Refer to Appendix A, "Health, Safety, and Maintenance Tips," for information on the proper handling of these discs.

Your internal CD-ROM (compact disc read-only memory) drive for Macintosh computers works with CD-ROM discs, standard audio compact discs (CDs), and single-session or multisession Photo CDs. Your CD-ROM drive provides access to large amounts of information. However, you cannot save information on CD-ROM discs. ROM stands for *read-only memory,* meaning that the drive cannot "write" information onto CD-ROM discs.



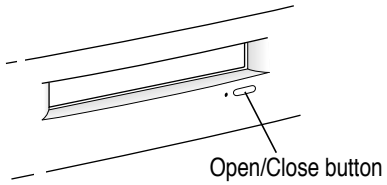
A wide selection of CD-ROM discs is available for entertainment, education, and business. A typical disc can hold over 650 megabytes (MB) of information—the equivalent of 270,000 pages of text, up to 8 hours of speech or music (depending on the sound quality), hundreds of high-resolution images, or any combination of text, sound, and graphics.

Inserting a CD-ROM disc

Follow these instructions to insert a CD-ROM disc into your CD-ROM drive. Then follow the instructions provided with your disc, as well as the instructions in this manual.

WARNING It is not recommended that you use small (8 cm) discs with your computer. Because your computer is designed to tilt and swivel on its base, small discs may not stay properly seated in the CD-ROM drive. If you do use a small disc, make sure your computer is as level as possible, and don't tilt and swivel the base while a small disc is in the drive. An improperly seated small disc in your computer may result in damage to the disc, the CD-ROM drive, or both.

1. **Start up your Macintosh computer, if it's not already on.**
2. **Press the Open/Close button to open the tray of the CD-ROM drive.**

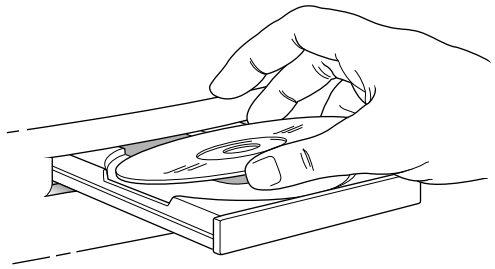


The tray opens.

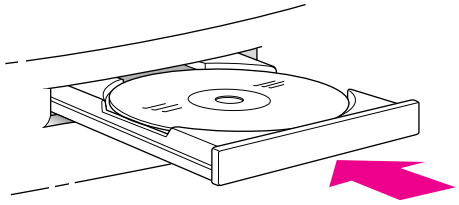
3. **Place a CD-ROM disc in the tray, with the disc label facing up.**

Make sure the disc is lying flat and centered in the tray.

If you are using a small (8 cm) disc, make sure your computer is as level as possible, the disc is centered within the inside ring on the tray, and you don't tilt or swivel the computer while the small disc is in the drive.



4 **Push the tray in, or press the Open/Close button, to close the tray.**



In a few moments, an icon for the CD-ROM disc appears on your screen.

Ejecting a CD-ROM disc

Follow these instructions to open the tray and eject a CD-ROM disc from your computer.

IMPORTANT You may not be able to eject a disc if it is being shared. To turn off file sharing, use the Sharing Setup control panel.

1 **Open the tray.**

There are several ways to open the tray of your CD-ROM drive.

If a CD-ROM disc icon appears on your screen:

- Select the disc icon on your screen and drag the icon to the Trash. (*Note:* You won't lose information on the CD-ROM disc by dragging its icon to the Trash.)

  IMPORTANT Don't select the disc icon and then choose Eject Disk from the Special menu. If you do this, the computer keeps the CD-ROM disc in its memory and keeps asking you to reinsert it.
- Click the disc icon, then choose the Put Away command in the File menu.
- While the AppleCD Audio Player window is active, choose Eject CD from the File menu, or simultaneously press the ⌘ and E keys. (AppleCD Audio Player is a program that allows you to control your CD-ROM player and is available in the Apple [] menu.)

If no CD-ROM disc icon appears on your screen:

- Press the Open/Close button for your CD-ROM drive.

2 **Take the CD-ROM disc out of the tray.**

Store your disc in a safe place, away from heat, dust, and moisture.

3 **Push the tray in, or press the Open/Close button, to close the tray.**

To avoid possible damage to the tray or the CD-ROM drive, keep the tray closed when you are not using it.

Using the CD-ROM discs that came with your computer

Some of the CD-ROM discs that came with your computer—and some CD-ROM discs in general—require you to copy one or several items from the disc to your hard disk before you can view them. Other discs let you view the CD-ROM disc's contents directly from the CD-ROM disc itself. If you have a CD-ROM disc that requires you to copy some items to your hard disk, you'll get a message telling you so when you try to open a program on the CD-ROM disc.

IMPORTANT Never copy an entire CD-ROM disc to your hard disk. (Don't drag the CD-ROM disc's icon to your hard disk.) If you get a message telling you to copy or install items from the CD-ROM disc to your hard disk, double-click the CD-ROM disc's icon to open it and copy those items—not the CD-ROM disc icon itself—to your hard disk. Look for any "read me" or "information" files on the CD-ROM disc for instructions. Copying the CD-ROM disc itself will take up too much memory on your hard disk.

Types of compact discs you can use

Not all CD-ROM discs store information in the same way. A disc stores and displays information according to a particular file format. Your computer's system software must understand the file format in order to use the contents of the disc.

Standard file formats

You can use CD-ROM discs with these standard file formats:

- HFS (Hierarchical File System)—the standard format used by the Macintosh.
- ISO 9660—the International Standards Organization's file format for CD-ROM discs. This format has been adopted by many CD manufacturers to make their discs compatible with a variety of computers. It is also the format that allows you to use Photo CDs in your CD-ROM drive.
- The High Sierra format, a predecessor of the ISO 9660 format.
- Photo CDs.
- Audio CDs.

The software that lets you use discs with these file formats is already installed on your computer.

Other CD-ROM formats

Your CD-ROM drive also works with file formats other than the ones listed above (for example, CD-ROM XA), provided that you install the appropriate software on your Macintosh. To find out about the availability of Macintosh software for additional file formats, contact the publisher of a particular disc.

Audio CDs

Your CD-ROM drive can play audio CDs and audio tracks on CD-ROM discs using your computer's built-in speaker. You can also attach headphones or speakers to your computer for stereo sound. For further information, see the "CD-ROM Discs" topic of Macintosh Guide, available in the Guide (?) menu.

Photo CDs

With your CD-ROM drive, you can use QuickTime to open digitized images stored on Photo CDs.

For more information on Photo CDs, see the "CD-ROM Discs" topic of Macintosh Guide, available in the Guide [?] menu.

Playing audio CDs

With your CD-ROM drive and your computer's built-in speaker, you can play audio compact discs (CDs) or audio tracks on CD-ROM discs. You can also attach headphones or speakers to the computer to listen to audio CDs and audio tracks. See the illustrations in Chapter 3 for information on where to connect sound equipment to your computer.

To start, stop, and otherwise control audio discs, use the AppleCD Audio Player program, available in the Apple (🍎) menu. Your audio CD software will only play tracks that contain audio information. You can listen to an audio CD or audio tracks in the background while you do other work on your computer. For more information about playing audio CDs, see the "CD-ROM Discs" topic of Macintosh Guide, available in the Guide (?) menu.

Working with Photo CDs

You can use your CD-ROM drive to open Photo CD images stored on Photo CDs. A Photo CD image is a digitized version of a standard photograph that you can open and view on your computer screen.

You can do many things with the images on your Photo CDs:

- Open and view the images individually on your computer screen.
- View the images on your computer screen in a series, as you would view a slide presentation.
- Copy and save the images, print them, paste them into word-processing documents or other documents that accept graphics, and edit them with a graphics application program.

  Photo CD images are an excellent source of graphics for desktop publishing, multimedia presentations, business documents, and professional-quality graphic design. For more information on working with Photo CD images, see the "CD-ROM Discs" topic of Macintosh Guide, available in the Guide [?] menu.

Obtaining Photo CDs

Your own photographs can be recorded as Photo CD images on a Photo CD. To obtain a Photo CD of your own photographs, take your standard 35-mm film to a photofinisher who has a Photo CD system. The photofinisher develops your film, digitizes the photographs, and gives you back a Photo CD containing your Photo CD images. A single Photo CD can hold approximately one hundred images.

If your Photo CD isn't full, you can take it back to the photofinisher and have more photos added until the disc is full. Such discs are called *multisession discs* because they contain images added after the first session. Your CD-ROM drive can read both single-session and multisession Photo CDs. (Other CD-ROM drives can read only single-session discs and are unable to read the additional images placed on a multisession disc.)

Before viewing the contents of a Photo CD

Normally, you open Photo CD images with the SimpleText program that came with your computer. If you wish, you can use a graphics or image-editing program instead of SimpleText to open images. For instructions, see the "CD-ROM Discs" topic of Macintosh Guide, available in the Guide (?) menu. If you use SimpleText to view high-resolution images, you should increase the amount of memory that SimpleText uses. For more information on memory, see the "Memory" topic of Macintosh Guide, available in the Guide (?) menu.

A note about resolution

When a Photo CD image is created, it's recorded at five different levels of resolution. The higher the resolution, the more information is recorded about the image, and the sharper the image appears when displayed or printed at larger sizes. However, high-resolution images take up a lot of memory—up to 18 MB of data for one photograph—which affects file size, as well as the amount of time it takes to display or print an image.

It's best to work with a resolution appropriate for your monitor or printer. Some monitors and printers cannot display or print very high-resolution images.

For most work, a resolution of 768 x 512 pixels or smaller is suitable. For detailed work or very high-quality reproductions, you may want to use a higher resolution.

Make sure to open high-resolution images with application programs designed to handle large image files. SimpleText cannot open very large files.

Sharing a CD-ROM disc over a network

You can share a CD-ROM disc using the file-sharing feature of System 7.5. If the disc has audio portions, you will be able to hear the audio yourself, but other people on the network will not. Likewise, you cannot hear the audio portions of discs you access over a network.

For further information about file sharing in System 7.5, see the "Sharing Files" topic of Macintosh Guide, available in the Guide (?) menu.

Consult this chapter if you experience problems using your computer.

6 Troubleshooting

When you have questions

If you want to know how to do a particular task with your computer, refer to Macintosh Guide in the Guide (?) menu. For instructions on using Macintosh Guide, see Chapter 2 of this manual.

If you have trouble

While you're using your computer, you may occasionally see a bomb icon or an error message, or the pointer (↖) may "freeze" on the screen. If you have trouble with your computer, take a few minutes to read the information in this chapter. If your problem is related to a particular procedure, you should also look for information on that procedure in Macintosh Guide, available in the Guide (?) menu. For additional troubleshooting information and a list of common questions relating to your system software, see the "Troubleshooting" topic of Macintosh Guide.

If you are unable to access Macintosh Guide (for example, if your screen is "frozen"), refer to this chapter to see if you can resolve the problem.

WARNING If you have a problem with your computer and nothing presented in this chapter solves it, consult the service and support information that came with your computer for instructions on how to contact an Apple-authorized service provider or Apple for assistance. If you attempt to repair the computer yourself, any damage you may cause to the computer will not be covered by the limited warranty on your computer. Contact an Apple-authorized dealer or service provider for additional information about this or any other warranty question.

Take your time

When you see an error message, you don't have to take action immediately. The message stays on the screen until you click the OK (or Restart) button or turn off the Macintosh.

To help diagnose and correct the problem, follow the suggestions in this section. Gather as much information on the situation as you can. Then follow the instructions in "Start Over," which follows.

- Make a note of exactly what you were doing when the problem occurred. Write down the message on the screen. List the programs you were using and the names of any items you know have been added to the System Folder since the system software was installed. This information will help a service person diagnose the problem. (It is helpful to keep a printed copy of the items in your System Folder. For instructions on printing the contents of a folder, see the "Printing" topic of Macintosh Guide, available in the Guide [?] menu.)
- Check the screen for any clues. Is a menu selected? What programs and document icons are open? Note anything else that seems relevant.
- If you were typing text and were not able to save it before the problem occurred, you can write down the parts of the text still visible on the screen so that some of your work will be easy to replace.
- Ask other Macintosh users about the problem you're having; they may have a solution for it.

If you need repair service, consult the service and support information that came with your computer for instructions on how to contact an Apple-authorized service provider or Apple for assistance.

If you know the problem is with a program not published by Apple, call the program's publisher. Click the Phone Numbers button in the Service/Support area of the Launcher to get a software publisher's phone number.

Start over

Often you can eliminate a problem simply by clearing the computer's memory and starting over.

If you can, save any open documents before restarting the Macintosh. If your system is frozen and does not respond to anything you do, or if you have a "bomb" message on the screen, saving may not be possible. You can try pressing ⌘-Option-Esc to quit the program in use when the problem occurred; if this works, you can then save the documents open in other programs before restarting. Restart the computer immediately after you save your documents—quitting a program using ⌘-Option-Esc may leave corrupted data in the computer's memory. This corrupted data is erased when you restart the computer.

Note: Use this key combination to force a program to quit only when you can't choose Quit from the File menu.

To restart your Macintosh, try the following steps:

1. **If you can, choose Restart from the Special menu or from the dialog box that's on screen.**

   Dialog boxes contain messages from the computer. If something goes wrong, a message may appear on the screen, asking you to restart the computer.

2. **If you can't choose Restart, press the Power key on the keyboard.**

3. **If the Power key on the keyboard doesn't work, hold down the ⌘ and Control keys while you press the Power key (marked with a triangle).**

   This key combination restarts the computer. (Use this key combination only when you can't choose Restart from the Special menu or restart the computer using the Power key.)

4 **If your computer still doesn't restart, turn off your computer with the power switch, wait at least 10 seconds, and then turn it on again.**

If you suspect that the problem is with other equipment, such as a printer or an external hard disk that's attached to your computer, turn that equipment off for 10 seconds or longer, then turn it on again and restart the Macintosh.

Rebuild your desktop

A process known as "rebuilding the desktop" helps your Macintosh keep track of data on your startup disks. (Although the hard disk in your computer is usually the startup disk, you can start up from any other disk that has system software installed.)

Rebuilding your desktop can solve a number of problems. For example, when application documents are no longer represented by application-specific icons (and are instead represented by generic icons on the desktop), rebuilding the desktop fixes the problem. Afterward, appropriate icons should appear for all documents.

Some extensions may interfere with rebuilding your desktop. To prevent problems, you'll need to turn off all extensions except Macintosh Easy Open before you rebuild your desktop. When you finish rebuilding the desktop, turn the extensions you normally use back on. These steps are described below.

To rebuild the desktop of a startup disk, follow these steps:

1 **Open the Extensions Manager control panel by choosing Extensions Manager from the Control Panels submenu of the Apple (🍎) menu.**

2 **From the Sets pop-up menu, choose Save Set.**

3 **In the Save Set dialog box, type a name for your currently selected extensions (for example, "My Extensions") and click OK. The name of your set is added to the Sets pop-up menu.**

This saves your current set of extensions.

4 **Choose All Off from the Sets pop-up menu to turn off all extensions.**

5 **Turn on Macintosh Easy Open by clicking it in the list (under the Control Panels heading) so that a checkmark appears beside it.**

6 **Restart your computer while holding down the Command (⌘) and Option keys.**

Hold down the ⌘ and Option keys until you see the dialog box that asks if you're sure you want to rebuild your desktop file. When the dialog box appears, you can release the keys.

7 **Click OK.**

The desktop is rebuilt.

IMPORTANT Do not stop the desktop-rebuilding process. Doing so could corrupt your system files.

8 **Open the Extensions Manager control panel by choosing Control Panels from the Apple (🍎) menu. When the Control Panels window appears, double-click the Extensions Manager icon.**

9 **From the Sets pop-up menu, choose the name you gave your set of extensions in step 3.**

This turns your original set of extensions back on.

10 **Restart your computer to activate the extensions.**

Solutions to common problems

This section contains descriptions of problems you could experience with your computer. Some problems may be caused by your CD-ROM drive, so if you don't find your problem here, be sure to check the section, "Solutions to CD-ROM Problems," later in this chapter.

The computer is turned on but the screen is dark.

One of the following is probably the cause:

- You have a screen saver program that darkens the screen when the computer has not been used for a certain period.

  Press a key or move the mouse to turn off the screen saver.
- Your computer has gone to sleep due to inactivity. "Wake it up" by pressing the power key (marked with a triangle) on the keyboard.
- The screen control buttons (☼) are not adjusted properly.

  Press the right screen control button to lighten the screen.

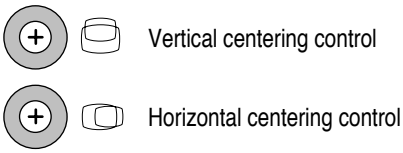
- The Macintosh is not getting power.

  Check that the computer's power cord is firmly connected to the computer and plugged into a grounded electrical outlet, and that the outlet has power.

If you are displaying video from your computer on a television screen, it is normal for your computer monitor to be dark.

The screen image is off center.

If the picture on your screen appears to be off center, use the centering controls on the back of the computer to adjust it. Use a small screwdriver to turn the controls.



The computer's clock keeps time inaccurately.

Your computer has a clock that runs continuously. When the computer is turned off, a battery keeps the clock running. If your clock begins to keep time inaccurately, have your Apple-authorized service provider replace the battery. Do not attempt to replace the battery yourself.

When you start up, a disk icon with a blinking question mark appears in the middle of the screen.

This icon indicates that your Macintosh cannot find the system software it needs to start up. One of the following is probably the cause:

- Your computer may be having a problem recognizing external SCSI (Small Computer System Interface) equipment, such as hard disks, CD-ROM drives, and scanners that you may have connected to your computer.

Shut down your computer, turn off all external SCSI equipment, and disconnect the first SCSI device in the chain from your computer's SCSI port. Then restart the computer. If the computer starts up after you disconnect your SCSI equipment, refer to the manuals that came with the equipment and to Chapter 3 of this manual for information on the proper way to connect SCSI equipment and assign SCSI ID numbers.

If you have a printer connected to your computer's SCSI port, make sure your printer is connected properly. Most printers connect to the printer port, not the SCSI port. Check the manuals that came with your printer for information on how to connect it properly.

- System software is not installed on the startup hard disk, the system software is damaged, or the hard disk is not working properly.

  Start up your computer using the *Macintosh Performa CD: Performa Software*. For instructions on how to start up your computer from the CD-ROM disc, see "Starting Up From a CD-ROM Disc" in the section "Repairing a Damaged Disk" later in this chapter. Then follow the instructions in "Repairing a Damaged Disk" later in this chapter to test your startup hard disk and repair any damage.

  If repairing the disk doesn't help, follow the instructions in Chapter 7, "Installing or Reinstalling Your Software," to reinstall system software on your startup hard disk.

A disk icon with an X appears in the middle of the screen and a floppy disk is ejected from the disk drive.

This icon indicates that the floppy disk you tried to start up from is not a startup disk. (When you turn on your computer, it looks first in the floppy disk drive for a disk containing system software. If the disk in the drive does not contain system software, the computer ejects the disk and looks on its internal hard disk for system software.)

Wait a few seconds. The computer should start up from its internal hard disk. Make sure you insert floppy disks only after the computer has begun starting up.

A "sad Macintosh" icon appears and the computer won't start up.

This icon indicates that your Macintosh cannot start up because of a problem with the system software or the computer hardware.

Eject any floppy disks by turning off the computer and then holding down the mouse button while you turn the computer on again. Try starting up with the *Macintosh Performa CD : Performa Software*. For instructions on how to start up your computer from the CD-ROM disc, see "Starting Up From a CD-ROM Disc" in the section "Repairing a Damaged Disk" later in this chapter. If the "sad Macintosh" icon appears again, consult the service and support information that came with your computer for information on contacting an Apple-authorized service provider or Apple for assistance.

The hard disk icon does not appear on the desktop.

If you don't see a hard disk icon on the desktop, try the following:

- Use the Drive Setup program to make the disk available. Drive Setup is on the *Macintosh Performa CD: Performa Software* that came with your computer. (For instructions, start Drive Setup, then choose Drive Setup Guide from the Guide [?] menu or see "Checking for Damage On Your Hard Disk" in the section "Repairing a Damaged Disk" later in this chapter.)
- If the hard disk is internal, shut down your computer, wait at least 10 seconds, and then turn it on again.
- If the hard disk is external, make sure that it is turned on and that its cable is connected firmly; then restart the Macintosh.
- Check the ID numbers of all SCSI equipment connected to your computer. Each SCSI device must have its own unique ID number. If your computer came with the optional CD-ROM drive installed, the drive has SCSI ID number 3. The computer itself (the main logic board) has SCSI ID number 7. For information on setting SCSI ID numbers, see the manuals that came with your SCSI equipment and Chapter 3 of this manual.

- If the hard disk is your startup disk, start your computer with the *Macintosh Performa CD: Performa Software*. (For instructions on how to start up your computer from the CD-ROM disc, see "Starting Up From a CD-ROM Disc" in the section "Repairing a Damaged Disk" later in this chapter.) Then follow the instructions in "Repairing a Damaged Disk" later in this chapter to test your startup hard disk and repair any damage.

  If repairing the disk doesn't help, follow the instructions in Chapter 7, "Installing or Reinstalling Your Software," to reinstall system software on your startup hard disk.

Icons do not appear correctly on your screen.

You need to rebuild the desktop—a process that helps your Macintosh keep track of files and folders on your hard disk. For instructions, see "Rebuild Your Desktop" in the section "If You Have Trouble" earlier in this chapter.

If icons do not appear correctly after you rebuild the desktop, try rebuilding a second time.

Your Macintosh can't read a floppy disk.

If you see a message that a floppy disk is unreadable, try one of the following:

- If the disk has never been used, you may simply need to initialize it—that is, prepare it for use. For instructions, see the "Disks" topic of Macintosh Guide, available in the Guide (?) menu.
- The disk may be damaged. See "Repairing a Damaged Disk" later in this chapter for information on testing and repairing disks.
- The disk may have been formatted for use on another kind of computer. You may be able to use a program that lets you work with such disks on your Macintosh.

If you are trying unsuccessfully to use a DOS floppy disk, consider the following:

- Make sure the PC Exchange control panel is in the Control Panels folder (in the Apple [] menu) and that it is enabled. To enable PC Exchange, open the Extensions Manager control panel and click the PC Exchange item (under the Control Panels heading) to make a checkmark appear. Then restart your computer.

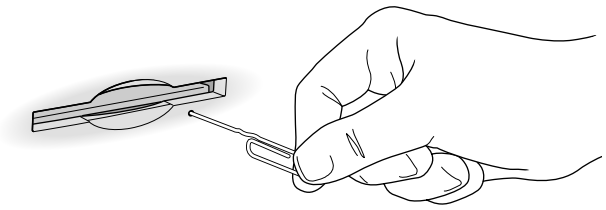
- When formatting floppy disks on a DOS computer for use in a Macintosh, you need to format standard double-sided disks as 720K disks and high-density disks as 1440K disks. Double-sided disks formatted in 1440K format and high-density disks formatted in 720K format may not work in a Macintosh.

  If you think your DOS floppy disk might have a format that doesn't work in a Macintosh, use a DOS computer to copy the contents of the disk onto a properly formatted disk.

You can't eject a floppy disk.

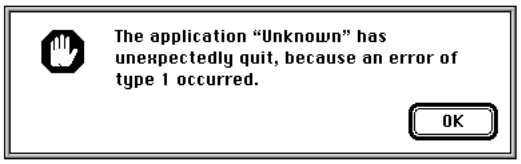
If you can't eject a floppy disk in the usual way, try the following in order:

- Hold down the ⌘ and Shift keys and press the number 1 key on your keyboard to eject a disk in the internal disk drive.
- Turn off the computer. If the disk isn't ejected, then hold down the button on your mouse or other pointing device while you turn the computer on again.
- Locate the small hole near the disk drive's opening, and carefully insert the end of a large straightened paper clip into it. Push gently until the disk is ejected. Do not use excessive force.



If none of these solutions works, take the computer or disk drive to your Apple-authorized service provider to have the disk removed.

You can't start an application program or it quits unexpectedly. Or, when you try to open a program, you see a message that not enough memory is available.



One of the following is probably the cause:

- The Macintosh ran out of memory.

  Quit the programs that you have open and then open the program you want to use, or restart your Macintosh.

  Use the Memory control panel to turn on virtual memory. For more information on virtual memory, see the "Memory" topic of Macintosh Guide, available in the Guide (?) menu.

- The program needs more memory.

  Use the program's Info window to give it more memory. For more information on increasing a program's memory, see the "Memory" topic of Macintosh Guide, available in the Guide (?) menu.

- Sometimes incompatible system extensions or control panels can cause software problems. Restart while holding down the Shift key to temporarily turn off all system extensions.

  If your program works normally after you do this, use the Extensions Manager control panel (in the Control Panels folder in the Apple [] menu) to turn off individual extensions and control panels. This procedure should identify incompatible extensions and control panels. (If you just added new software to your computer, its system extension is the most probable cause of the problem.) For detailed instructions, see the information about managing system extensions in the "Customizing Your Computer" topic of Macintosh Guide, available in the Guide (?) menu.

  If your program performs better when a particular extension or control panel is turned off, contact the software's manufacturer for information or an upgrade.

A dialog box with a bomb appears.

There is a software problem.

- Write down what you were doing when the message appeared, and write down the text of the message.
- Restart your Macintosh. (See "Start Over" in the section "If You Have Trouble" earlier in this chapter for instructions.) Most software problems are temporary, and restarting usually corrects the problem.
- If the problem recurs, check the startup disk and application program you were using when the dialog box appeared. Make sure that all programs, desk accessories, and system extensions you're using are compatible with the system software (as described in the next paragraph). Reinstalling the system software may correct the problem. See Chapter 7, "Installing or Reinstalling Your Software."
- Sometimes incompatible system extensions or control panels can cause system software problems. Restart while holding down the Shift key; this temporarily turns off all system extensions. If your computer works normally after you do this, use the Extensions Manager control panel (in the Control Panels folder in the Apple [] menu) to turn on extensions and control panels one at a time. Restart after you turn on each extension. This procedure should identify incompatible extensions and control panels. (If you just added new software to your computer, its system extension is the most probable cause of the problem.) For detailed instructions, see the information about managing system extensions in the "Customizing Your Computer" topic of Macintosh Guide, available in the Guide (?) menu.

  If your computer performs better when a particular extension or control panel is turned off, contact the software's manufacturer for information or an upgrade.

- If the bomb only occurs in one application program, try reinstalling the program from the original disks. If reinstalling doesn't solve the problem, contact the manufacturer of the program.
- If the problem recurs, you may need to reinstall system software. See Chapter 7, "Installing or Reinstalling Your Software," for instructions.

The pointer (↖) doesn't move when you move the mouse.

One of the following situations is probably the cause:

- There is a software problem. Try the following:

  Press ⌘-Option-Esc to quit the application program in use when the problem occurred. If this works, you can save the documents open in other programs before restarting.

  Restart your Macintosh. See "Start Over" in the section "If You Have Trouble" earlier in this chapter for instructions.
- Follow the suggestions in the previous entry, "A Dialog Box With a Bomb Appears."
- The mouse or keyboard is not connected properly.

  Check that the mouse and keyboard cables are connected properly, and then restart the computer.

IMPORTANT Do not connect or disconnect the mouse while the computer is turned on. You may damage your computer.

- Signals from the mouse are not reaching the computer, either because the mouse needs cleaning or because there is something wrong with the mouse.

  Clean the mouse according to the instructions in Appendix A of this book.

  If you have another mouse or pointing device, try connecting and using it. (Turn the computer off before connecting it.) If the new device works, there is probably something wrong with the mouse you replaced.

If none of these procedures solves the problem, consult the service and support information that came with your computer for instructions on how to contact an Apple-authorized service provider or Apple for assistance.

Typing on the keyboard produces nothing on the screen.

One of the following is probably the cause:

- You haven't selected any text or set the insertion point (|).

  Make sure the program you want to type in is the active program. Then place the pointer (↖) in the active window and click to set an insertion point (|) or drag to select text (if you want to replace the text with your typing).

- If the computer beeps every time you press a key, Easy Access is probably turned on. Open the Extensions Manager control panel in the Control Panels folder in the Apple (🍎) menu. Click the checkmark next to Easy Access to remove the checkmark and to turn off Easy Access. Then restart your computer.

- The keyboard is not connected properly.

  Check that the keyboard cable is connected properly at both ends.

- Some system software features are turned on that affect the way the keyboard works.

  Open Easy Access from the control panels listed under the Apple (🍎) menu and turn off Sticky Keys, Slow Keys, and Mouse Keys.

- There is a software problem.

  Restart your Macintosh. For instructions, see "Start Over" in the section "If You Have Trouble" earlier in this chapter.

  Follow the instructions, starting with the third bulleted (■) paragraph, in the earlier entry, "A dialog box with a bomb appears."

- The keyboard is damaged.

  If you have access to another keyboard, try using it instead. (Turn the computer off before connecting it.) If the new keyboard works, there is probably something wrong with the one you replaced.

If none of these procedures solves the problem, consult the service and support information that came with your computer for instructions on how to contact an Apple-authorized service provider or Apple for assistance.

You can't open a document, or you see a message that an application program can't be found.

- Some documents can be opened by more than one application program. Try starting a program that you think might be able to open the document, then choose Open from the program's File menu to try to open the document.
- Purchase and install the correct software to use the document, or find out if the creator of the document can convert it to a form that one of your programs can use.
- Don't try to open the files in your System Folder. Most of the files in your System Folder are used by your computer for internal purposes and are not intended to be opened.
- Rebuild your desktop. Follow the instructions in "Rebuild Your Desktop" in the section "If You Have Trouble" earlier in this chapter.
- If the document is from a DOS computer, use the PC Exchange control panel (in the Control Panels folder in the Apple [] menu) to specify which Macintosh program will open the document. For information about working with DOS documents on your Macintosh, see the information about DOS in Macintosh Guide, available in the Guide (?) menu.

Your computer won't restart, and a CD-ROM disc is in the CD-ROM drive.

- Your computer may be trying to start up from the CD-ROM disc. Press the Open/Close button of your CD-ROM drive to open the tray, and remove the CD-ROM disc. Close the tray, then restart your computer.

You experience problems using a document from a DOS computer.

If you can't open a DOS document using a Macintosh program, try the following:

- Open the document from within the program by choosing Open in the program's File menu.
- Use the PC Exchange control panel (in the Control Panels folder in the Apple [] menu) to specify which Macintosh program will open the document.

If a DOS document is displayed incorrectly, or you see strange codes or characters in the document, try one of the following:

- Your application program may have special procedures for opening and saving documents with different file formats. See the information that came with your program, or call the program's publisher.
- Try opening the document in another program.

Note: Some characters that can be displayed on the Macintosh are not accurately displayed on DOS computers.

For more information about working with DOS documents on your Macintosh, see the information about using DOS in Macintosh Guide, available in the Guide (?) menu.

Your computer starts up and you see large folder-shaped areas, containing labeled pictorial buttons, instead of the usual Macintosh desktop.

- Your computer may have started up from a CD-ROM disc containing At Ease, an alternative to the Macintosh desktop. You need to have the Macintosh desktop on your screen before you can use any of the software installation instructions in this manual.

  To return to the Macintosh desktop, choose Shut Down from the Special menu. When your computer is off, restart the computer, then press the Open/Close button of your CD-ROM drive to open the tray. Remove the CD-ROM disc. Close the tray. Then start up your computer again.

To avoid having the computer start up from a CD-ROM disc, remember to remove any disc in the drive before you shut down your computer.

You see a message that your application program can't be opened because a file can't be found.

Macintosh programs designed specifically for the PowerPC microprocessor (also called "native" applications) use special files called *shared libraries*. Any necessary shared libraries should be installed automatically when you install these special Macintosh programs.

Follow the directions that came with your program to reinstall the program. If the shared library is still missing, contact the software program's manufacturer for assistance.

You experience problems using an older Macintosh program.

Some older Macintosh programs are not completely compatible with Macintosh computers that have the PowerPC microprocessor.

- Open the Memory control panel (in the Control Panels folder in the Apple [] menu) and turn off Modern Memory Manager.
- If that doesn't work, contact the program's publisher to see if an upgrade is available.

You inadvertently delete a program from your hard disk.

You can replace any of the software that came with your computer by dragging it from the *Macintosh Performa CD: Performa Software* to your hard disk. See the section "Copying Files from the CD to Your Hard Disk" in Chapter 7.

Your screen displays a right angle bracket (>).

If you press the ⌘ and Power keys at the same time, you may get a caret prompt on your screen. To return to the desktop, type the letter G and press Return.

You can't quit (get out of) one of the programs you opened in the Launcher.

Some programs in the Learning section of the Launcher are self-running demos. If you can't get out of one of these programs, try the following:

- Look again to see if you can find a quit button or other quitting option.
- Hold down the ⌘ key on your keyboard, and then, while keeping this key held down, press the period key. If this doesn't work, hold down the ⌘ key and press the letter Q on your keyboard.
- Press the Power key (marked with a triangle) on your keyboard to shut down. If that doesn't work, restart your computer by holding down the ⌘ and Control keys while you press the Power key (marked with a triangle).

Solutions to CD-ROM problems

Problems using the CD-ROM drive

The CD-ROM drive icon does not appear on the screen.

- If you have other SCSI devices attached to your computer, make sure that each device has a unique SCSI ID number (your CD-ROM drive has SCSI ID 3). Refer to the documentation that came with your SCSI devices if you need to reset SCSI ID numbers.
- If you reinstalled the CD-ROM software, make sure to restart your computer after you reinstall the software.
- Make sure that the Apple CD-ROM extension is turned on in the Extensions Manager control panel. Open the Extensions Manager control panel in the Control Panels folder in the Apple (🍎) menu. Click to put a checkmark next to "Apple CD-ROM." Then restart your computer.

You've just ejected a CD-ROM disc, but the computer keeps asking you to reinsert it.

- The right way to eject a CD-ROM disc is to select the CD-ROM disc icon and choose Put Away from the File menu or drag the CD-ROM disc's icon to the trash. If you select the CD-ROM disc icon and choose Eject Disk from the Special menu, the computer keeps the CD-ROM disc in its memory and keeps asking you to reinsert it. Reinsert the CD-ROM disc, then drag its icon to the trash. (You won't lose information on the CD-ROM disc by dragging its icon to the trash.)

Your computer starts up and you see large folder-shaped areas, containing labeled pictorial buttons, instead of the usual Macintosh desktop.

- Your computer may have started up from a CD-ROM disc containing At Ease, an alternative to the Macintosh desktop. You need to have the Macintosh desktop on your screen before you can use any of the software installation instructions in this manual.

  To return to the Macintosh desktop, choose Shut Down from the Special menu. When your computer is off, restart the computer, then press the Open/Close button of your CD-ROM drive to open the tray. Remove the CD-ROM disc. Close the tray. Then start up your computer again.

To avoid having the computer start up from a CD-ROM disc, remember to remove any disc in the drive before you shut down your computer.

The tray of your CD-ROM drive won't open.

If a CD-ROM disc icon appears on your screen:

- Drag the disc icon to the Trash, or select it and choose Put Away from the File menu. (*Note:* You won't lose information on the CD by dragging its icon to the Trash. *Don't* select the disc icon and then choose Eject Disk from the Special menu.)

  If the AppleCD Audio Player is active, choose Eject CD from the File menu.

  If you see a message that a disc can't be put away because it is being shared, turn off file sharing, then try again to put away the disc.

If no CD-ROM disc icon appears on your screen:

- Press the Open/Close button for your CD-ROM drive.
- The signal to open the tray may not be reaching the computer. Turn off your computer before doing the following: Locate the small pinhole to the lower right of the CD-ROM tray opening. Insert the end of a large straightened paper clip firmly and horizontally into the pinhole. Push gently until the tray is released, then carefully pull the tray open. Do not force the tray open; wait until the paper clip has dislodged it or you may break the front of the tray.

WARNING Turn off your computer before you attempt to eject the tray using a paper clip. If you don't, you may damage the CD-ROM drive.

If neither of these suggestions works, your CD-ROM drive may be damaged. Contact an Apple-authorized service provider or Apple for further assistance.

Your computer won't restart, and a CD-ROM disc is in the CD-ROM drive.

- Your computer may be trying to start up from the CD-ROM disc. Press the Open/Close button of your CD-ROM drive to open the tray, and remove the CD-ROM disc. Close the tray, then restart your computer.

Problems using CD-ROM discs

You insert a CD-ROM disc, but its icon doesn't appear on the Macintosh desktop.

- Make sure that the disc label is facing up and the disc is centered in the tray. If you are using a small (8 cm) disc, make sure your computer is as level as possible, the disc is centered within the inside ring on the tray, and you don't tilt or swivel the computer while the small disc is in the drive.
- Make sure the tray is closed all the way.
- Try restarting your computer.
- Try starting your computer from the *Macintosh Performa CD : Performa Software*. Do this by inserting the CD, then restarting your computer while holding down the C key. If only the hard drive icon appears on the desktop, then there may be a hardware problem with your CD-ROM drive. If the CD-ROM icon appears above the hard disk icon, reinstall your CD-ROM software. The easiest way to do this is by reinstalling your system software, following the instructions in Chapter 7, "Installing or Reinstalling Your Software."

  CD-ROM software is already installed on Macintosh computers that come with CD-ROM drives. You can reinstall it by reinstalling your system software, following the instructions in Chapter 7, "Installing or Reinstalling Your Software."
- Make sure that the Apple CD-ROM extension is turned on in the Extensions Manager control panel. Open the Extensions Manager control panel in the Control Panels folder in the Apple (🍎) menu. Click to put a checkmark next to "Apple CD-ROM." Then restart your computer.

Your computer displays the message "This is not a Macintosh disk: Do you want to initialize it?" when you insert a CD-ROM disc in the CD-ROM drive.

- Make sure that the Foreign File Access and Audio CD Access CD-ROM extensions are installed in your Extensions folder in the System Folder on your hard disk and are turned on. If they are not turned on, use the Extensions Manager control panel in the Control Panels folder in the Apple (🍎) menu to turn them on. Then restart your computer.
- Make sure the CD-ROM software is installed. (The CD-ROM software is already installed on Macintosh computers that come with CD-ROM drives.)

- The disc may use a format that the Macintosh cannot recognize. Ask the disc's manufacturer for a disc that a Macintosh can recognize.

Your computer ejects a CD-ROM disc without giving you any error message.

- Make sure the disc is flat in the tray and the disc label is facing up.

IMPORTANT If you're using a small (8 cm) disc, make sure it's centered within the tray's inner ring and the computer is absolutely level (you have not tilted or swiveled the computer to adjust the angle of the screen). An improperly seated small disc in your computer may result in damage to the disc, the CD-ROM drive, or both.

- The disc may need to be cleaned. (See "Handling CD-ROM Discs" in the section "Handling Your Computer Equipment" in Appendix A.) If there are visible scratches on the shiny side of the disc, you may be able to remove them with a CD polishing kit (available from your audio CD dealer). If the scratches can't be removed, you'll need to replace the disc.
- The disc may be damaged. Try another disc in the drive, and try the original disc in another drive. If the original drive reads other discs or if the original disc also doesn't work in another drive, the disc is probably damaged. You'll need to replace the disc.

You can't open a document on a CD-ROM disc.

- Try opening the application program first; then open the document.
- Read the manual that came with your CD-ROM disc. Some discs come with software that you need to install on your computer before using the disc.

You can't save changes you make to information on a CD-ROM disc.

- CD-ROM is a read-only medium. This means that information can be read (retrieved) from it, but not written (stored) on it. You can save the changed information on a hard disk or floppy disk.

Problems using ISO 9660 or High Sierra discs

You cannot access files on a CD-ROM disc that uses the ISO 9660 or High Sierra format.

- Discs in the ISO 9660 and High Sierra disc formats have version numbers attached to file names. Some application programs need these version numbers in order to work with files. To make the version numbers available to programs on your computer, follow these instructions.

  Drag the CD icon to the Trash. When the tray opens, hold down the Option key and push the tray back in. Continue to hold down the Option key until the disc is in the drive. The program you are using should now be able to locate file names on that CD-ROM disc.

- Make sure that Foreign File Access, ISO 9660 File Access, and High Sierra File Access are present in the Extensions folder in your System Folder on your hard disk.

Problems playing audio CDs

You don't hear any sound when you play an audio CD or an audio track on a CD-ROM disc using the AppleCD Audio Player.

- If you have headphones or speakers connected to the computer, adjust the connectors to make sure they are firmly connected. Make sure the volume control on your headphones or speakers is not turned down too low.
- If you do not have headphones or speakers connected to the computer, make sure that nothing else is plugged into the sound output port on your computer. (To find the sound output port, see the illustration in Chapter 3.)
- If you are using a CD-ROM disc over a network, you won't be able to hear the audio portion.
- Make sure the volume is turned up in the AppleCD Audio Player. With the Audio Player open, drag the volume control slider up, use the volume controls on your computer, or press the Up Arrow key on your keyboard.
- The CD may have been paused. Click the Play/Pause button in the AppleCD Audio Player once or twice.

While playing an audio track on a CD-ROM disc that combines audio tracks and data, you double-click the disc icon and the audio track stops playing.

- You can't open data files on a CD-ROM disc and listen to audio tracks on that disc at the same time.

You are unable to record sound from an audio CD.

- You may need to reset the sound options in the Monitors & Sound control panel. Refer to the "Sound" topic of Macintosh Guide, available in the Guide (?) menu.

Problems using Photo CDs

You insert a Photo CD disc, but its icon doesn't appear on the desktop.

- Reinstall the CD-ROM and QuickTime software. The easiest way to do this is by reinstalling your system software, following the instructions in Chapter 7, "Installing or Reinstalling Your Software."

Your computer does not display color icons for individual images on a Photo CD.

- Your computer may be low on memory. To view color icons, restart your computer and then reopen the Photos folder. See the "Memory" topic of Macintosh Guide, available in the Guide (?) menu, for more information on managing memory.

After you open an image on a Photo CD, the image is scrambled, colors are displayed incorrectly, or no image appears in the window.

- The program you are using may not be designed to work with large (high-resolution) image files. You can open the image with another program or you can assign more memory to the program. (See the "Memory" topic of Macintosh Guide, available in the Guide [?] menu, for more information on managing memory.)

After you open an image on a Photo CD, your system is "frozen" and does not respond to any input, or you have a "bomb" message on your screen.

- Restart your Macintosh. (See the section "Start Over" at the beginning of this chapter.) The program you are using may not be designed to work with large (high-resolution) image files. You can open the image with another program or you can assign more memory to the program. (See the "Memory" topic of Macintosh Guide available in the Guide [?] menu, for more information on managing memory.)

If your computer's performance decreases

If you notice a decrease in your computer's speed and general performance after you install special software (a control panel, system extension, or custom utility), it may be because the software is not compatible with Macintosh computers built with the PowerPC microprocessor.

- To find out if a system extension or control panel is the problem, hold down the Shift key while you restart the computer. This temporarily turns off control panels and extensions. If the computer performs better without this software, the software is likely to be the problem. (If you just added new software, its system extension or control panel is the most probable cause of the problem.)

  To find out which software is the problem, use the Extensions Manager control panel (in the Control Panels folder in the Apple [] menu) to turn off a system extension or set of extensions. (If you just added new software to your computer, its system extension is the most probable cause of the problem.) For detailed instructions, see the information about managing system extensions in the "Customizing Your Macintosh" topic of Macintosh Guide, available in the Guide (?) menu. If the computer performs better when an extension is turned off, contact the extension's manufacturer for information or an upgrade.
- Use the Memory control panel to turn off virtual memory. For more information on virtual memory, see the "Memory" topic of Macintosh Guide, available in the Guide (?) menu.
- If you typically use several application programs at the same time, your computer's performance will increase if you install more RAM (random-access memory). See Appendix E, "Installing Additional Memory."

If you still do not notice an improvement, you may want to reinstall system software on your startup hard disk. See Chapter 7, "Installing or Reinstalling Your Software," for instructions.

Solving printer problems

The following suggestions should work for all printers. (*Note:* Also refer to the manual that came with the printer.)

- Make sure that the printer driver for your printer is turned on in the Extensions Manager control panel (in the Control Panels folder in the Apple [] menu). To find out the name of the printer driver—for example, *LaserWriter*—refer to the documentation that came with your printer. The printer driver should appear in the Extensions list and have a checkmark beside it. (Click to put a checkmark beside it, and then restart your computer.)
- Check your printer settings in the Chooser (in the Apple [] menu), making sure you have selected the correct printer. If you are using a printer that is shared by other computer users (a printer on a local network), make sure that AppleTalk (in the lower-right corner of the Chooser) is active. If you are using your own printer (a serial printer connected to your computer), make sure that AppleTalk is inactive.
- Turn off the computer and printer and check the printer cable connections.
- If none of these suggestions solves the problem, you may need to reinstall the printer driver that came with your printer. (Refer to the manual that came with your printer.)

  Note: If you have an Apple printer, you need to determine which printer driver to reinstall—the one that came with your printer or one of the drivers included on your *Macintosh Performa CD: Performa Software*. Depending on when you bought your printer, one of these printer drivers will be more recent than the other. It is the more recent one you want. Look at the date of the printer driver that came with your printer. (Usually, the printer driver comes on a floppy disk with the printer.) To see the date, insert the floppy disk, double-click its icon to open it, and choose "by Name" from the View menu. Then look for the same printer driver name on the *Macintosh Performa CD: Performa Software*. (Look for it in the Hard Disk Files folder, in the System Folder files folder, in the Extensions folder. Then choose "by Name" from the View menu to see the date next to it.) *The drivers must have the same name.* If they do, reinstall the printer driver with the most recent date next to it. If you use the printer driver on the *Macintosh Performa CD: Performa Software,* drag the printer driver into the

System Folder on your hard disk and then click OK. If you use the printer driver that came with the printer, see the manuals that came with the printer for instructions on reinstalling it.

Repairing a damaged disk

If you see a message reporting that a disk is damaged or unreadable, you may need to repair the disk.

Try these suggestions first

If you can't start up from a hard disk or you don't see the hard disk icon on the desktop, try the following:

- If the hard disk is internal, shut down your Macintosh, wait at least 10 seconds, and then turn it on again.
- If the hard disk is external, make sure that it is turned on and that its cable is connected firmly; then restart the Macintosh.
- If the hard disk is your startup disk, start up with a different startup disk. (See "Starting Up From a CD-ROM Disc," which follows.)

  If, after you start up from a different disk, your hard disk's icon appears on your desktop, reinstall system software on the hard disk. (See Chapter 7, "Installing or Reinstalling System Software.")
- Check the ID numbers of all SCSI equipment connected to your computer. Each device must have a unique ID number. The computer itself (the main logic board) has ID number 7 and the internal CD-ROM drive has ID number 3. The ID numbers 0, 1, 2, 4, 5, and 6 are available for additional SCSI devices.

  Also check that the chain of devices is terminated properly. For information on setting SCSI ID numbers and terminating a SCSI chain, see the manuals that came with your SCSI equipment and Chapter 3 of this manual.
- If none of these suggestions solves the problem, test the disk by following the instructions given in "Checking for Damage on Your Hard Disk," later in this section.

Starting up from a CD-ROM disc

To test, repair, or initialize a hard disk, or to install system software on a hard disk, you need to start up your computer from another disk. You can start up your computer using the *Macintosh Performa CD: Performa Software*, a compact disc that came with your computer.

The procedure for starting up from the CD varies, depending on the condition of the system software on your hard disk. To find out which procedure to use, you must turn on your Macintosh.

The steps that follow tell how to start up from a CD-ROM disc, depending on what you see on your screen.

If you see a blinking question mark on your screen

The blinking question mark means that your Macintosh is unable to find usable system software on your hard disk.

1. **Press the Open/Close button of your CD-ROM drive to open the CD-ROM tray.**
2. **Place the *Macintosh Performa CD: Performa Software* in the tray with the disc label facing up.**

   Make sure the disc is lying flat in the tray.
3. **Push the tray in, or press the Open/Close button, to close the tray.**

   Your Macintosh recognizes the CD as a startup disk, and in a few seconds the Macintosh desktop with a Launcher appears.

If you see the Macintosh desktop

1. **Press the Open/Close button of your CD-ROM drive to open the CD-ROM tray.**
2. **Place the *Macintosh Performa CD: Performa Software* in the tray with the disc label facing up.**

   Make sure the disc is lying flat in the tray.

3 **Push the tray in, or press the Open/Close button, to close the tray.**

4 **Hold down the C key on your keyboard while you choose Restart from the Special menu.**

Continue to hold down the C key until you see the “Welcome to Macintosh” message.

Checking for damage on your hard disk

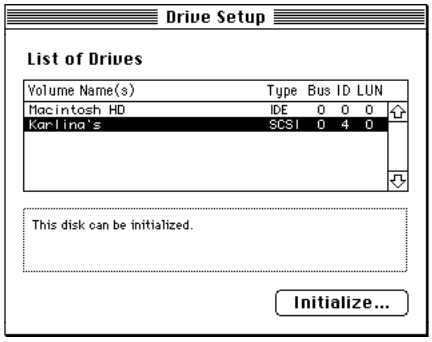
You can test a hard disk for damage with the Drive Setup program, which is on the *Macintosh Performa CD: Performa Software* that came with your computer.

1 **Start up your computer from the *Macintosh Performa CD: Performa Software*.**

See “Starting Up From a CD-ROM Disc” earlier in this section.

2 **Click the Drive Setup icon in the Launcher to open the Drive Setup program.**

3 **In the list of drives, click the disk you want to test.**



4 **From the Functions menu, choose Test Disk.**

5 **When a message tells you that the testing is complete, click Quit.**

If the test reveals a problem, you may be able to correct it by using Disk First Aid or another disk repair program (see the instructions in the next section), or you may need to reinitialize the disk (see the section “Initializing a Hard Disk” later in this chapter). Consult an Apple-authorized service provider for assistance if necessary. If you had a hard disk from another manufacturer installed after you bought your computer, use the software that came with the disk or contact the disk vendor to get the latest version of software.

How to repair a hard disk or floppy disk

You can repair some types of disk damage by using the Disk First Aid program, which is on the *Macintosh Performa CD: Performa Software* that came with your computer.

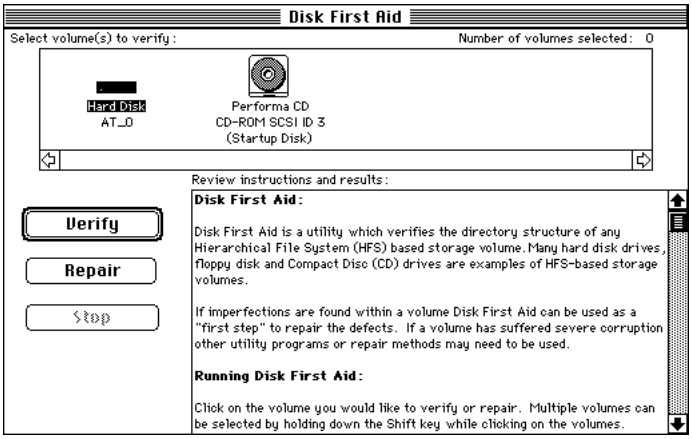
1 **Start up your computer from the *Macintosh Performa CD: Performa Software*.**

See “Starting Up From a CD-ROM Disc” earlier in this section.

2 **Click the Disk First Aid icon in the Launcher to open the Disk First Aid program.**

3 **Click the icon of the disk you want to test.**

Disk icons appear in a box at the top of the Disk First Aid window.



4 **Click Repair to begin testing and repairing the disk.**

You can't repair the startup disk or the disk that contains the Disk First Aid program, but you can test these disks by clicking Verify. If the program reveals a problem with either of these disks, start up the computer from another disk so that you can repair the damaged disk.

If you want to test and repair another disk, click its icon and then click Repair.

5 **When testing and repair are done, choose Quit from the File menu.**

If Disk First Aid cannot correct the problem

- Try repairing the disk again. Sometimes repeating the process corrects the problem.
- Use another disk repair or recovery program. Some disk repair programs let you recover information from a damaged disk.
- Consult an Apple-authorized service provider for help.
- If you can't repair the disk, you'll need to reinitialize it, which erases all the information on it. Before you reinitialize, be sure you recover all the information you can and back it up. Then erase (reinitialize) the disk. For instructions on reinitializing a floppy disk (that is, preparing it for use), see the "Disks" topic of Macintosh Guide, available in the Guide (?) menu. For instructions on reinitializing a hard disk, see the next section, "Initializing a Hard Disk."

  If initialization doesn't work, discard the damaged disk (if it's a floppy disk), or take it to your Apple-authorized service provider for repair (if it's a hard disk). Bring both of the *Macintosh Performa CDs* (which you received with your computer) with you to the service provider.

Initializing a hard disk

The hard disk inside your computer was initialized (formatted for use) at the factory, so you shouldn't need to initialize it. You need to initialize a hard disk only if one of the following is true:

- You purchase an uninitialized hard disk from another manufacturer.
- Your hard disk is damaged and can't be repaired.

If a hard disk needs to be initialized, the disk's icon does not appear on the desktop when you start up the computer using another disk.

You initialize your internal hard disk using a program called Drive Setup, which is on the *Macintosh Performa CD: Performa Software* that came with your computer.

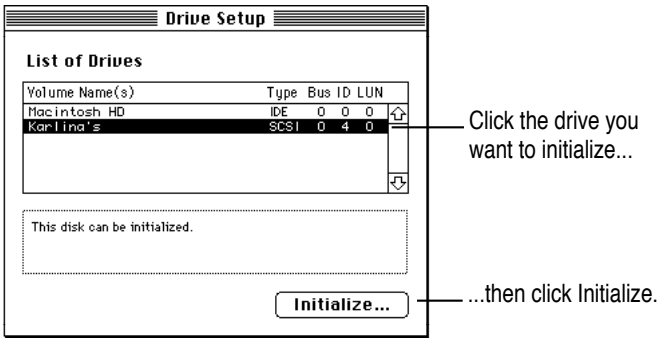
WARNING Initializing a disk erases any information that may be on it. Before you initialize a damaged disk, try to repair it as described in "Repairing a Damaged Disk" earlier in this chapter.

1 **Start up your computer from the *Macintosh Performa CD: Performa Software.***

See "Starting Up From a CD-ROM Disc" in the section "Repairing a Damaged Disk," earlier in this chapter.

2 **Click the Drive Setup icon in the Launcher to open the Drive Setup program.**

3 **In the list of drives, click the disk you want to initialize.**



4 **Click Initialize to initialize the hard disk.**

5 **Click Quit when you see a message reporting that initialization was successful.**

If a message reports that initialization failed, try again. If initialization fails a second time, take the disk to your Apple-authorized service provider for repair.

Consult this chapter if you have problems with your computer that require you to reinstall the computer's software.

7 Installing or Reinstalling Your Software

System software is the set of programs and other files that your computer uses to start itself up, keep track of your files, and run the application programs you use. System software is kept in the System Folder. When you turn on your computer, it looks for a startup disk, which is a disk that contains the system software. The startup disk is usually the hard disk that's inside your computer, though another hard disk or a floppy disk can also be a startup disk.

When should you install or reinstall system software?

Your Macintosh came with all the necessary system software installed on its internal hard disk, so you don't need to install system software on that disk unless you encounter software problems.

If you have a new hard disk or a newly initialized hard disk that doesn't contain system software, or if you want to upgrade to a more recent version of system software on a hard disk, you'll need to install system software. You can install or reinstall system software by following the instructions in this chapter.

If your hard disk already has system software installed on it but there is a problem with the disk or the software, you may see this icon in the middle of the screen:

If this icon appears, first try testing your startup hard disk and repairing any damage. To do this, follow the instructions in "Repairing a Damaged Disk" in Chapter 6. If repairing the disk doesn't help, you may need to reinstall system software, following the instructions in this chapter.

When to use the *Macintosh Performa CD: Performa Software*

You reinstall your computer's software by using the *Macintosh Performa CD: Performa Software,* a compact disc that came with your computer. You need to use the CD to reinstall the software if

- your computer will not start
- a file or an application program is missing or damaged

This chapter describes three ways to use the *Macintosh Performa CD: Performa Software:*

- You can reinstall just the system software—the files needed to run your computer—using the Restore System Software program.
- You can reinstall all the software that came with your computer, using the Restore All Software program to restore that software to its original condition.
- You can copy one or more individual files from the CD to your hard disk.

The other *Macintosh Performa CD* that came with your computer (subtitled *Guided Tour*) also contains backup copies of the Guided Tour programs you may have seen when you first turned on your computer. This chapter also contains instructions on how to use the *Guided Tour* CD.

The "If You Still Have Problems" section toward the end of this chapter (after the sections that explain how to reinstall your software) tells you what to do if the CD does not solve the problems with your computer.

Using the CD as your startup device

Before you reinstall software onto your hard disk, you need to start up your computer with the *Macintosh Performa CD: Performa Software*. The procedure for starting up from the CD varies, depending on the condition of the system software on your hard disk. To find out which procedure to use, you must turn on your Macintosh.

If you see a blinking question mark on the screen

The blinking question mark means that your Macintosh is unable to find usable system software on your hard disk.

Note: If you don't see a blinking question mark, go to "If You See the Macintosh Desktop."

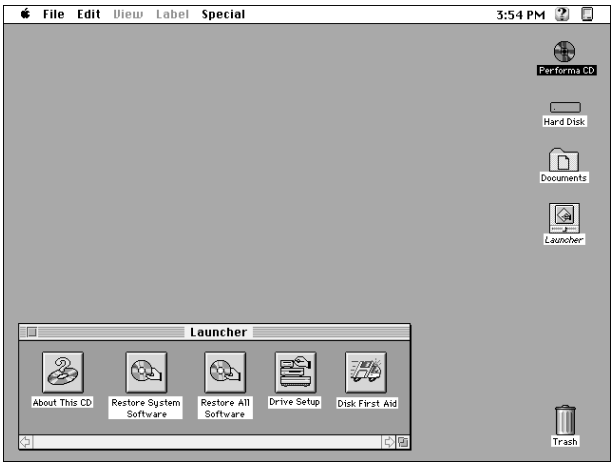
1 **Press the Open/Close button of your CD-ROM drive to open the CD-ROM tray.**

2 **Place the *Macintosh Performa CD: Performa Software* in the tray with the disc label facing up.**

Make sure the disc is lying flat in the tray.

3 **Push the tray in, or press the Open/Close button, to close the tray.**

Your Macintosh recognizes the CD as a startup disk, and in a few seconds the desktop below appears.



Your screen may look slightly different from this one.

Now continue with the steps in "Reinstalling Your System Software" or "Reinstalling All Your Original Software," later in this chapter.

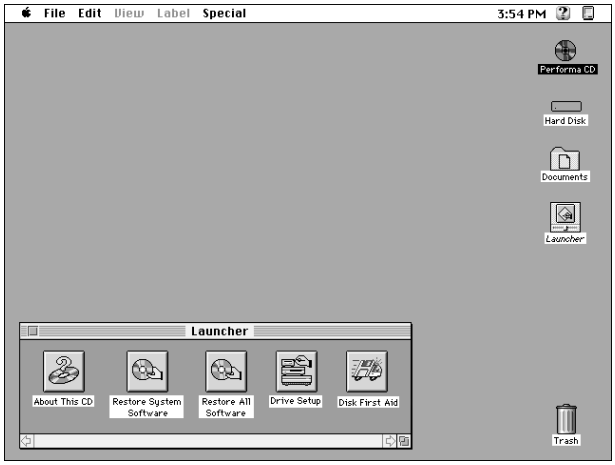
If you see the Macintosh desktop

1. **Press the Open/Close button of your CD-ROM drive to open the CD-ROM tray.**
2. **Place the *Macintosh Performa CD: Performa Software* in the tray with the disc label facing up.**

   Make sure the disc is lying flat in the tray.
3. **Push the tray in, or press the Open/Close button, to close the tray.**
4. **Hold down the C key on your keyboard while you choose Restart from the Special menu.**

   Continue to hold down the C key until you see the "Welcome to Macintosh" message.

   In a few seconds the Macintosh desktop with the Launcher appears.



Your screen may look slightly different from this one.

Now continue with the steps in "Reinstalling Your System Software" or "Reinstalling All Your Original Software."

Reinstalling your system software

Software can sometimes develop problems and may need to be replaced. Restore System Software is a program that reinstalls the system software that was on your computer when you purchased it.

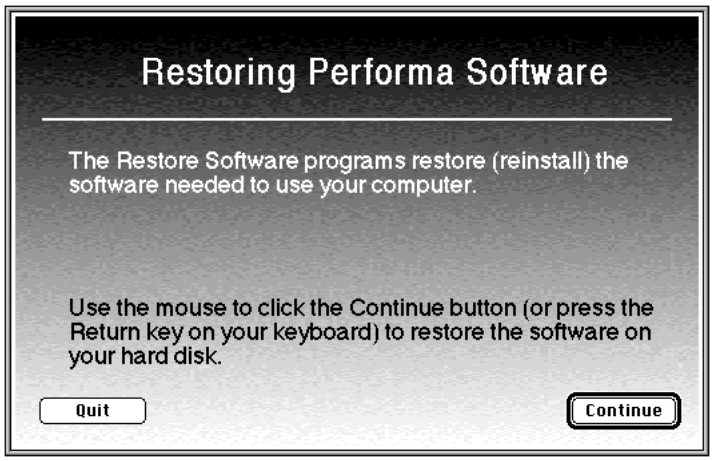
Note: When you use the Restore System Software program, only system software (all the Apple programs that run the computer) is reinstalled. All other programs and documents remain on your hard disk.

Before you begin, you must start up your computer using the *Macintosh Performa CD: Performa Software*. For instructions, see the previous section, "Using the CD as Your Startup Device."

1 **Locate the Restore System Software icon in the Launcher window.**

2 **Click the Restore System Software icon to open it.**

In a moment you'll see this screen:



3 **Click the Continue button, or press the Return key on your keyboard.**

Restoring begins. A status box appears and keeps you informed of progress during the restoring process, which takes several minutes.

4 **When you see a message that the software was restored successfully, click the Restart button or press the Return key on your keyboard.**

In a few moments, the Macintosh desktop with the Launcher appears on your screen:

Your screen may look slightly different from this one.

5 **Insert the *Macintosh Performa CD: Guided Tour* that came with your computer into the CD-ROM drive.**

The *Macintosh Performa CD: Guided Tour* reinstalls the software programs that you may have seen before when you first turned on your computer. (You should reinstall these in case you need to refer to them again.)

6 **Hold down the C key on your keyboard while you choose Restart from the Special menu.**

Continue to hold down the C key until you see the “Welcome to Macintosh” message.

7 **In the Launcher that appears on your screen, click the Guided Tour button.**

8 **When the Restoring Performa Software screen appears, click the Continue button or press the Return key on your keyboard.**

9 **When you see a message that the software was restored successfully, click the Restart button or press the Return key on your keyboard.**

In a few moments, the Macintosh desktop with the Launcher appears on screen (just as in step 4). You have successfully restored Apple software to your hard disk.

If your computer starts up properly but a program is damaged or missing, you may want to run the Restore All Software program from the *Macintosh Performa CD: Performa Software*. See the instructions in the next section, "Reinstalling All Your Original Software."

Reinstalling all your original software

If you want to restore the Macintosh Performa system software and application programs to the state they were in when you first purchased your computer, follow these instructions.

Note: If you have installed newer versions of programs that came with your computer, you may need to reinstall the newer versions after you use the Restore All Software program. All documents and programs that *didn't* come with your computer (all the files that you have added to your hard disk, such as letters and reports) remain on your hard disk when you reinstall your other software using the Restore All Software program.

Before you begin, you must start up your computer using the *Macintosh Performa CD: Performa Software*. For instructions, see "Using the CD as Your Startup Device," earlier in this chapter.

To restore all the software that came with your computer:

1 **Click the Restore All Software icon in the Launcher window.**

2 **In the dialog box that appears, click the Continue button, or press the Return key on your keyboard.**

Restoring begins. A status box appears and keeps you informed of progress during the restoring process, which takes several minutes.

3 **When you see a message that the software was restored successfully, click the Restart button or press the Return key on your keyboard.**

In a few moments, the Macintosh desktop with the Launcher will appear on your screen.

Your screen may look slightly different from this one.

4 **Insert the *Macintosh Performa CD: Guided Tour* that came with your computer into the CD-ROM drive.**

The *Macintosh Performa CD: Guided Tour* reinstalls the software programs that you may have seen before when you first turned on your computer. (You should reinstall these in case you need to refer to them again.)

5 **Hold down the C key on your keyboard while you choose Restart from the Special menu.**

Continue to hold down the C key until you see the "Welcome to Macintosh" message.

6 **In the Launcher that appears on your screen, click the Guided Tour button.**

7 **When the Restoring Performa Software screen appears, click the Continue button or press the Return key on your keyboard.**

8 **When you see a message that the software was restored successfully, click the Restart button or press the Return key on your keyboard.**

In a few moments, the Macintosh desktop with the Launcher appears on screen (just as in step 4). You have successfully restored all your original software to your hard disk.

If you still have problems

If you don't see the Macintosh desktop on your screen, or if the Macintosh still does not start up properly, see the section "Repairing a Damaged Disk" in Chapter 6.

If you are able to repair the hard disk, try again to restore the information on your hard disk, following the instructions in the previous section, "Reinstalling All Your Original Software."

If you are not able to repair the hard disk, call Apple for help. See the service support information that came with your computer.

Copying files from the CD to your hard disk

The *Macintosh Performa CD: Performa Software* has a folder on it named Hard Disk Files. You can copy any file in this folder by dragging the file to your hard disk. The Hard Disk Files folder contains these folders:

- System Folder files (contains system software)
- Apple Extras files (contains copies of Apple software)
- Applications files (contains copies of software not published by Apple)
- Documents files (contains various documents)

For example, if your computer is working but you have inadvertently deleted the SimpleText application program from your hard disk, you can copy the SimpleText program from the Apple Extras folder on the *Macintosh Performa CD: Performa Software.*

Note: Your CD may contain other programs, such as Apple Drive Setup and Disk First Aid. For information about Apple Drive Setup and Disk First Aid (which are used for testing and repairing disks), see the section "Repairing a Damaged Disk" in Chapter 6. For information about programs on either of the *Macintosh Performa CDs,* see any Read Me files that may accompany them on the CD.

Protecting the information on your hard disk

If your hard disk becomes damaged, you can use the *Macintosh Performa CDs* to reinstall the software that came with your computer—but the documents that you have created could be lost if you don't keep backup copies. Be sure to copy your documents frequently onto backup disks. See the section "Protecting the Information on a Disk" in Chapter 4.

Creating a startup floppy disk

The *Macintosh Performa CD: Performa Software* contains a program (in the Disk Images folder) that enables you to create a floppy disk that you can use to start up your computer. You may want to create a startup floppy disk to use in case you are unable at some time to start up from the CD.

See the text file in the Disk Images folder for instructions on using the program to make a startup floppy disk.

Read this appendix for important health and safety instructions, as well as tips on keeping your computer in good working order.

Appendix A
Health, Safety, and Maintenance Tips

For your own safety and that of your equipment, follow all the instructions in this chapter. Keep these instructions available for reference by you and others.

Health-related information about computer use

Muscle soreness, eye fatigue, and other discomforts and injuries sometimes associated with using computers can occur from performing any number of activities. In fact, misuse of the same muscles during multiple activities can create a problem that might not otherwise exist. For example, if you engage in nonwork activities that involve repetitive stress on the wrist—such as bicycling—and also use your computer's keyboard improperly, you may increase your likelihood of developing wrist problems. Some individuals are at greater risk of developing these problems because of their health, physiology, lifestyle, and general exposure to stress. Work organization and conditions, such as workstation setup and lighting, also play a part in your overall health and comfort. Preventing health problems is a multifaceted task that requires careful attention to the way you use your body every hour of every day.

The most common health effects associated with using a computer are musculoskeletal discomfort and eye fatigue. We'll discuss each area of concern below.

Musculoskeletal discomfort

As with any activity that involves sitting for long periods of time, using a computer can make your muscles sore and stiff. To minimize these effects, set up your work environment carefully, using the guidelines that follow, and take frequent breaks to rest tired muscles. To make working with your computer more comfortable, allow enough space in your work area so that you can change position frequently and maintain a relaxed posture.

Another type of musculoskeletal concern is repetitive stress injuries (RSIs), also known as cumulative trauma disorders (CTDs). These problems can occur when a certain muscle or tendon is repeatedly overused and forced into an unnatural position. The exact causes of RSIs are not totally understood, but in addition to awkward posture, such factors as the amount of repetition, the force used in the activity, the individual's physiology, workplace stress level, and lifestyle may affect the likelihood of experiencing an RSI.

RSIs did not suddenly arise when computers were invented; tennis elbow and writer's cramp, for example, are two RSIs that have been with us for a long time. Although less common than other RSIs, one serious RSI discussed more often today is a wrist problem called carpal tunnel syndrome, which may be aggravated by improper use of computer keyboards. This nerve disorder results from excessive pressure on the median nerve as it passes through the wrist to the hand.

This section offers advice on setting up your work area to enhance your comfort while you use your computer. Since the effects of repetitive movements associated with using a computer can be compounded by those of other work and leisure activities to produce or aggravate physical problems, proper use of your computer system must be considered as just one element of a healthy lifestyle.

No one, of course, can guarantee that you won't have problems even when you follow the most expert advice on using computer equipment. You should always check with a qualified health specialist if muscle, joint, or eye problems occur.

Eye fatigue

Eye fatigue can occur whenever the eyes are focused on a nearby object for a long time. This problem occurs because the eye muscles must work harder to view an object that's closer than about 20 feet (6 meters). Improper lighting can hasten the development of eye fatigue. Although eye fatigue is annoying, there's no evidence that it leads to permanent damage.

Whenever you're engaged in an activity that involves close-up work—such as reading a magazine, doing craft work, or using a computer—be sure to have sufficient glare-free lighting and give your eyes frequent rest breaks by looking up and focusing on distant objects. Remember to have your eyes examined regularly.

To prevent discomfort and eye fatigue:

- Arrange your work space so that the furniture is properly adjusted for you and doesn't contribute to an awkward working posture.
- Take frequent short breaks to give your muscles and eyes a chance to rest.

Arranging your office

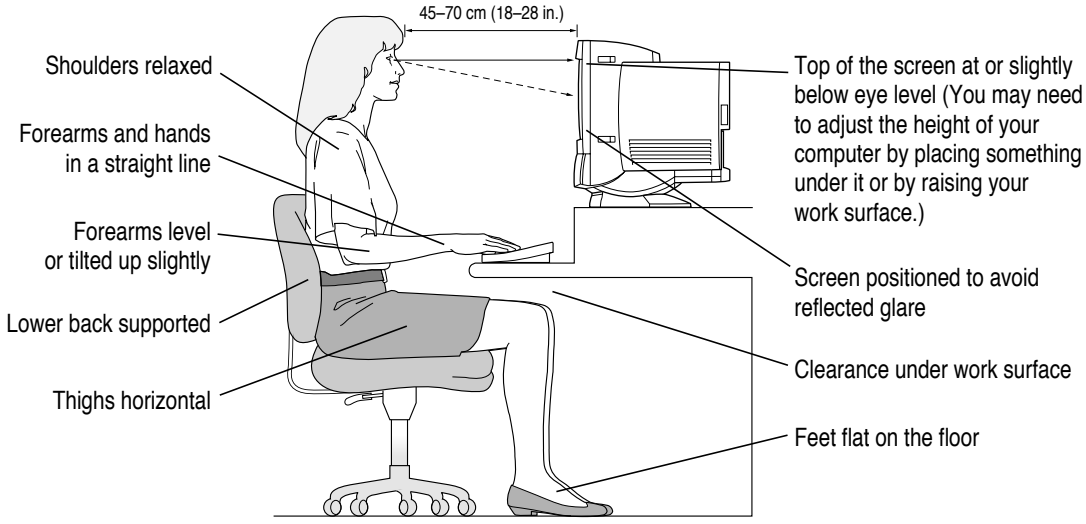
Here are some guidelines for adjusting the furniture in your office to accommodate your physical size and shape.

- An adjustable chair that provides firm, comfortable support is best. Adjust the height of the chair so your thighs are horizontal and your feet flat on the floor.

  The back of the chair should support your lower back (lumbar region). Follow the manufacturer's instructions for adjusting the backrest to fit your body properly.
- When you use the computer keyboard, your shoulders should be relaxed. Your upper arm and forearm should form an approximate right angle, with your wrist and hand in roughly a straight line.

You may have to raise your chair so your forearms and hands are at the proper angle to the keyboard. If this makes it impossible to rest your feet flat on the floor, you can use a footrest with adjustable height and tilt to make up for any gap between the floor and your feet. Or you may lower the desktop to eliminate the need for a footrest. Another option is to use a desk with a keyboard tray that's lower than the regular work surface.

- Position the mouse at the same height as your keyboard. Allow adequate space to use the mouse comfortably.
- Arrange the monitor so the top of the screen is slightly below your eye level when you're sitting at the keyboard. The best distance from your eyes to the screen is up to you, although most people seem to prefer 18 to 28 inches (45 to 70 cm).
- Position the computer to minimize glare and reflections on the screen from overhead lights and windows.



Avoiding fatigue

- Change your seated position, stand up, or stretch whenever you start to feel tired. Frequent short breaks are helpful in reducing fatigue.
- Use a light touch when typing or using a mouse and keep your hands and fingers relaxed.
- Some computer users may develop discomfort in their hands, wrists, or arms after intensive work without breaks. If you begin to develop chronic pain or discomfort in your hands, wrists, or arms, consult a qualified health specialist.
- Allow adequate workspace so that you can use your keyboard and mouse comfortably. Place papers or other items so you can view them easily while using your computer. A document stand may make reading papers more comfortable.
- Eye muscles must work harder to focus on nearby objects. Occasionally focus your eyes on a distant object, and blink often while you work.
- Clean your screen regularly. Keeping the screen clean helps reduce unwanted reflections.

What about electromagnetic emissions?

There has been recent public discussion of the possible health effects of prolonged exposure to extremely low frequency (ELF) and very low frequency (VLF) electromagnetic fields. Such fields are associated with electromagnetic sources such as television sets, electrical wiring, and some household appliances—as well as computer monitors.

Apple has reviewed scientific reports and sought the counsel of government regulatory agencies and respected health organizations. Based on the prevailing evidence and opinions, Apple believes that the electric and magnetic fields produced by computer monitors do not pose a health risk.

In response to those customers who wish to reduce their exposure to electromagnetic fields, Apple has lowered the emission levels of our products. We are also actively encouraging further scientific research so we can continue to promote the health and safety of our customers and employees.

Safety instructions

For your own safety and that of your equipment, always take the following precautions.

Turn off the computer completely and disconnect the power plug (by pulling the plug, not the cord) if any of the following conditions exists:

- the power cord or plug becomes frayed or otherwise damaged
- you spill something into the case
- your Macintosh is exposed to rain or any other excess moisture
- your Macintosh has been dropped or the case has been otherwise damaged
- you suspect that your Macintosh needs service or repair
- you want to clean the case (use only the recommended procedure described later in this chapter)

Be sure that you always do the following:

- Keep your Macintosh away from sources of liquids, such as wash basins, bathtubs, shower stalls, and so on.
- Protect your Macintosh from dampness or wet weather, such as rain, snow, and so on.
- Read all the installation instructions carefully before you plug your Macintosh into a wall socket.
- Keep these instructions handy for reference by you and others.
- Follow all instructions and warnings dealing with your system.

WARNING Electrical equipment may be hazardous if misused. Operation of this product, or similar products, must always be supervised by an adult. Do not allow children access to the interior of any electrical product and do not permit them to handle any cables.

Handling your computer equipment

Follow these guidelines for handling your computer and its components:

- When setting up your computer, place components on a sturdy, flat surface, and carefully follow all setup instructions.
- When connecting or disconnecting a cable, always hold the cable by its connector (the plug, not the cord).
- Turn off your computer and all its components before connecting or disconnecting any cables to add or remove any component. Failure to do so could seriously damage your equipment.
- Never force a connector into a port. If the connector and port do not join with reasonable ease, they probably don't match. Make sure that the connector matches the port and that you have positioned the connector correctly in relation to the port.
- Take care not to spill any food or liquid on the computer, keyboard, mouse, or other components. If you do, turn your computer off immediately and unplug it before cleaning up the spill. Depending on what you spilled and how much of it got into your equipment, you may have to bring your equipment to an Apple-authorized service provider.
- Protect the computer and its components from direct sunlight and rain or other moisture.
- Keep all ventilation openings clear and unobstructed. Without proper air circulation, components can overheat, causing damage or unreliable operation.

WARNING This equipment is intended to be electrically grounded. Your Macintosh is equipped with a three-wire grounding plug—a plug that has a third (grounding) pin. This plug will fit only a grounded AC outlet. This is a safety feature. If you are unable to insert the plug into the outlet, contact a licensed electrician to replace the outlet with a properly grounded outlet. Do not defeat the purpose of the grounding plug!

Handling the built-in monitor

Follow these procedures for handling the built-in monitor:

- Turn down the screen brightness control if you leave the computer turned on for extended periods. If the brightness is not turned down, the image on the screen could "burn in" and damage the screen.

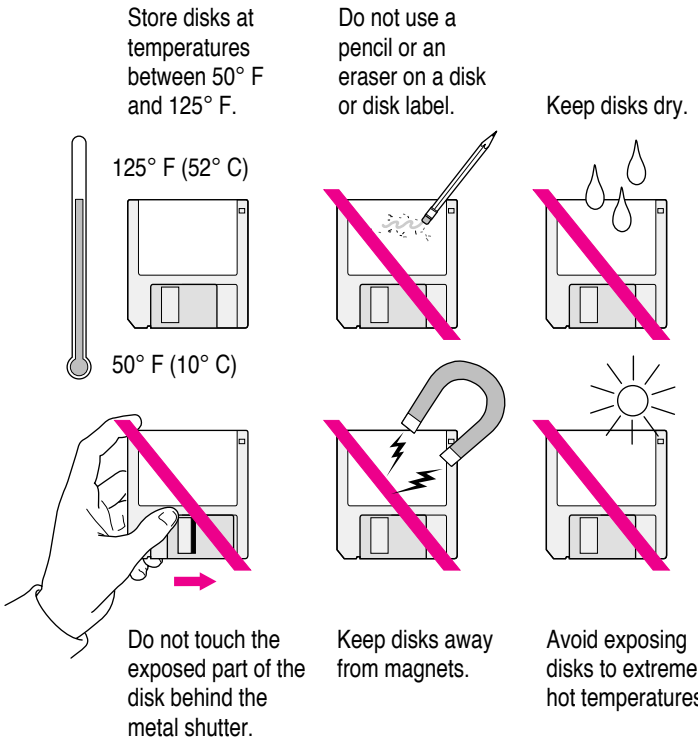
  You can also use a "screen saver" program, which dims or varies the image on the screen when the computer has been idle for a specified period of time. These programs are available from independent suppliers and user groups.
- Make sure the vents on the computer are clear and unobstructed.
- If there is interference on the monitor's screen or on a television or radio near your computer, move the affected equipment farther away.

Handling the keyboard

Take care not to spill any liquid on the keyboard. If you do, turn off your computer immediately.

- If you spill liquid that is thin and clear, unplug the keyboard, turn it upside down to let the liquid drain out, and let it dry for 24 hours at room temperature. If, after you take these steps, the keyboard doesn't work, take it to your Apple-authorized service provider for repair.
- If you spill liquid that is greasy, sweet, or sticky, unplug the keyboard and take it to your Apple-authorized service provider for repair.

Handling floppy disks

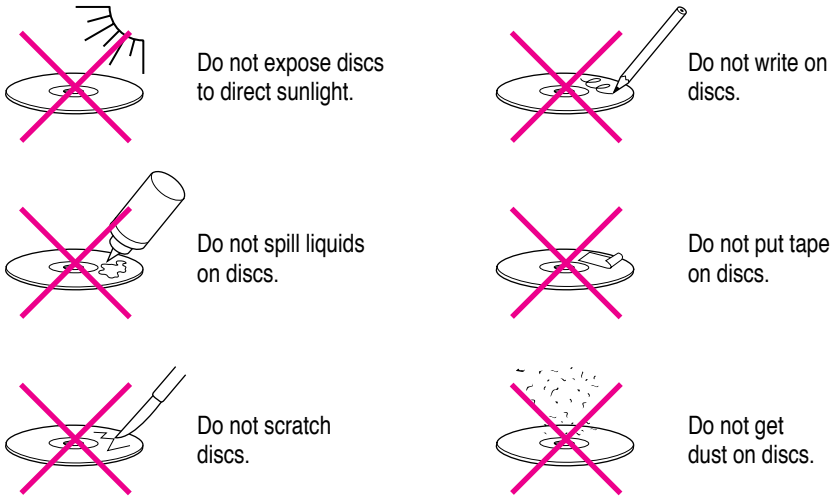


Handling CD-ROM discs

Keep these important safety instructions in mind as you use CD-ROM discs:

- Hold a disc by the edges or by one edge and the center hole. Do not touch the disc surface.
- To clean discs, wipe the shiny surface with a soft damp cloth, working in straight lines from center to edge. Do not use any form of cleaning agent.

- To avoid damage to your discs, keep these points in mind:



Other important safety instructions to keep in mind as you use your CD-ROM drive:

- Position your computer so that when the tray opens, it doesn't bump into anything.
- Do not leave the disc tray open. If dust gets on the lens of the CD-ROM drive, the drive may have problems reading your compact discs.
- Do not put anything (for instance, a cup) on top of the tray when it is open.
- Do not force the tray open by hand.
- Do not wipe the lens with a paper towel or other abrasive surface. If you need to clean the lens, see an Apple-authorized service provider for a lens cleaner.
- Never transport your computer with a disc inside the CD-ROM drive.
- Keep your computer equipment away from any source of liquid (such as wash basins, bathtubs, and shower stalls). If you drink coffee or other beverages while you're at your computer, take care not to spill.
- Avoid exposing your equipment to damp or wet weather. If your system is near a window, be sure the window is closed in rainy weather.

The tray on your CD-ROM drive automatically closes when you shut down your computer. You may want to open the tray and take out your CD-ROM disc before shutting down.

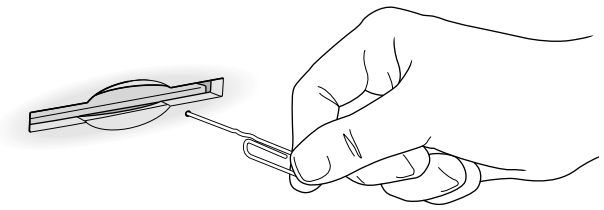
Ejecting a disk

For instructions on ejecting any disk (a floppy disk, a CD-ROM disc, or a removable media disk), see the "Disks" topic of Macintosh Guide, available in the Guide (?) menu.

If you can't eject a floppy disk

If you can't eject a floppy disk in the usual way, try the following in order:

- Hold down the ⌘ and Shift keys and press the number 1 key on your keyboard to eject a disk in the internal disk drive.
- Shut down the computer. If the disk isn't ejected, then hold down the button on your mouse or other pointing device while you turn the computer on again.
- Locate the small hole near the disk drive's opening, and carefully insert the end of a large straightened paper clip into it. Push gently until the disk is ejected. Do not use excessive force.



If nothing works, take the computer or disk drive to your Apple-authorized service provider to have the disk removed.

Power supply

The power supply in your computer is a high-voltage component and should not be opened for any reason, even when the computer is off. If the power supply needs service, contact your Apple-authorized dealer or service provider.

Cleaning your equipment

Follow these general rules when cleaning the outside of your computer and its components:

- Use a damp, soft, lint-free cloth to clean the computer's exterior. Avoid getting moisture in any openings.
- Don't use aerosol sprays, solvents, or abrasives.

Cleaning the computer case

To clean the case, do the following:

1. **Turn off the computer completely and then disconnect the power plug. (Pull the plug, not the cord.)**
2. **Wipe the surfaces lightly with a clean, soft cloth dampened with water.**

Cleaning the monitor

To clean the screen, put household glass cleaner on a soft cloth and wipe the screen. Don't spray the cleaner directly on the screen, because the liquid might drip into the monitor or computer.

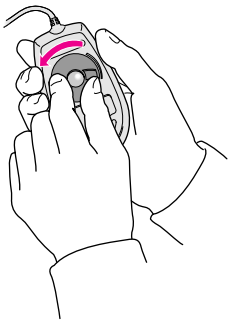
Cleaning the mouse

The mouse contains a small ball that must roll smoothly for the mouse to work properly. You can keep this ball free of dirt and grease by using the mouse on a clean, lint-free surface and cleaning it occasionally.

You need a few cotton swabs and a clean, soft, lint-free cloth.

1. **Turn off your computer.**

2 **Turn the mouse upside-down and turn the plastic ring on the bottom counterclockwise to disengage it.**

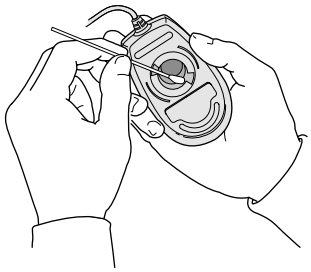


If the mouse is locked, see the next section, "Locking and Unlocking the Mouse," for instructions on how to unlock it.

3 **Turn the mouse right-side up with one hand and catch the ring and the ball with your other hand.**

4 **Clean the three small rollers inside the mouse with a cotton swab moistened with water.**

Rotate the rollers to clean all around them.



5 **Wipe the mouse ball with a clean, soft, dry, and lint-free cloth.**

6 **If necessary, wash the mouse ball with warm soapy water (use a mild soap such as a dishwashing liquid) and then dry the mouse ball thoroughly.**

7 **Gently blow into the mouse case to remove any dust that has collected there.**

8 **Put the ball and the ring back in place.**

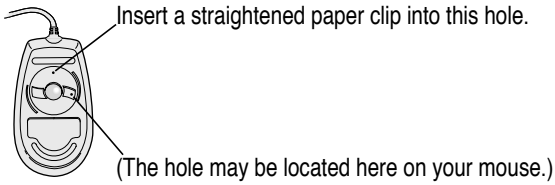
Your mouse should roll smoothly across your mouse pad or desk. If it doesn't, repeat these instructions carefully.

Locking and unlocking the mouse

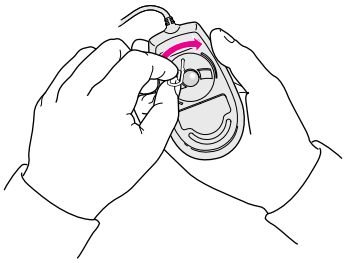
Some mouse devices can be locked so that the ball can't be removed. A locking mouse has a small hole on the plastic ring.

To lock the mouse, follow these steps:

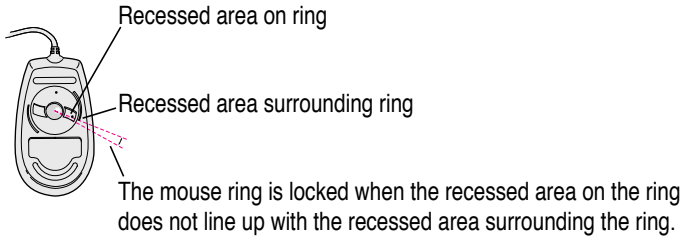
1 **Insert a straightened paper clip into the hole on the plastic ring.**



2 **Press down on the paper clip while you turn the ring clockwise.**

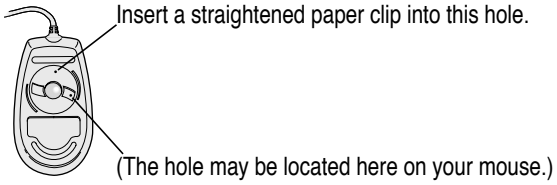


Turn the ring a very short distance, until it stops. When the recessed area on the ring is *not* lined up with the recessed area surrounding the ring, the mouse is locked.

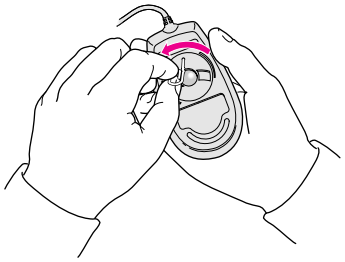


To unlock the mouse, follow these steps:

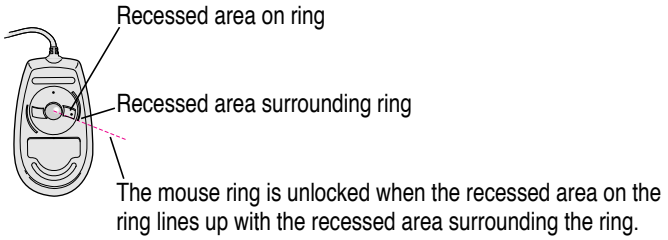
1 **Insert a straightened paper clip into the hole on the plastic ring.**



2 **Press down on the paper clip while you turn the ring counterclockwise.**



Turn the ring a very short distance. When the recessed area on the ring is lined up with the recessed area surrounding the ring, the mouse is unlocked.

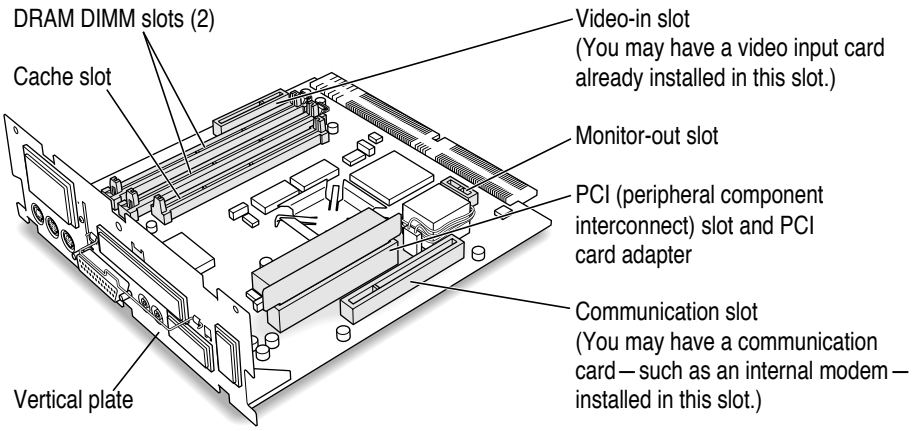


Read this appendix for instructions on installing an expansion card in your computer.

Appendix B
Installing an Expansion Card

Expansion cards are printed circuit boards that can be installed in your computer to give it special features, such as enhanced video capabilities, networking and communications, and additional processing power. Your Macintosh has slots available for three different kinds of expansion cards:

- a PCI (peripheral component interconnect) slot for a 6.88-inch long PCI card (such as a video editing card)
- a communication slot for an internal modem or Ethernet card (you may already have an internal modem installed in this slot)
- a video-in slot for a video input card that brings signals into the computer from a videocassette recorder (VCR), laser disc player, video camera, or similar device



You can also install the following additional expansion cards in your Macintosh:

- the Apple External Video Connector kit that allows video mirroring on an external monitor
- a TV tuner card that allows you to watch TV on your Macintosh

Other video cards that let you perform video editing and other functions may also be available for your computer.

This appendix contains instructions for installing a PCI card or a communication card. To install a video input card or a TV tuner card (if you don't already have these cards installed) or the Apple External Video Connector kit, follow the instructions that came with the card or kit.

WARNING To avoid damaging your computer and expansion card, do not attempt to install any expansion card without first checking the documentation for that card. If the documentation specifies that an Apple-certified technician must install the card (usually because the installation requires special training or tools), consult the service and support information that came with your computer for instructions on how to contact an Apple-authorized service provider or Apple for assistance. If you attempt to install the card yourself, any damage you may cause to your computer or card will not be covered by the limited warranty on your computer. If the card is not an Apple-labeled product, check with an Apple-authorized dealer or service provider to see if you can install it yourself.

Installing an expansion card involves three procedures:

- opening the computer
- inserting the card into a specific slot or socket
- closing the computer

Opening the computer

IMPORTANT To avoid generating static electricity that may damage components, do not walk around the room until you have completed the installation of the expansion card or memory and closed the computer. Additionally, move the logic board as little as possible while it is outside the computer case.

1 **Shut down your computer by choosing Shut Down from the Special menu.**

You can also press the Power key on the keyboard.

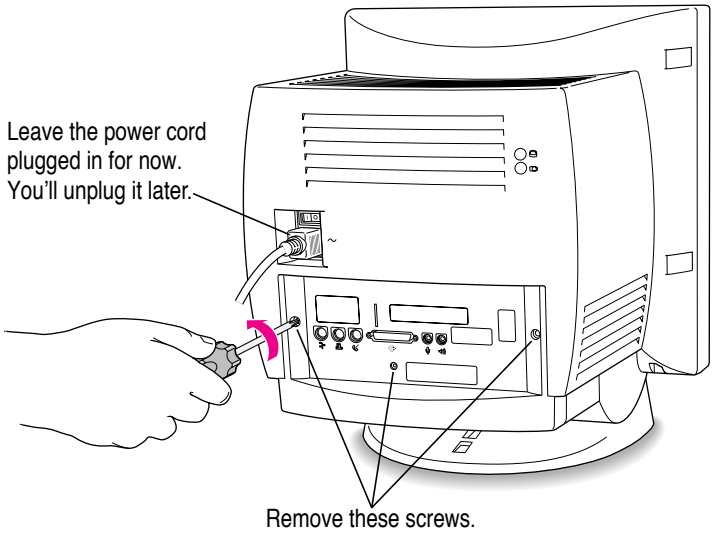
2 **Turn the computer completely off by pressing the power switch at the back of the computer.**

Press the side of the switch marked with the ○ symbol.

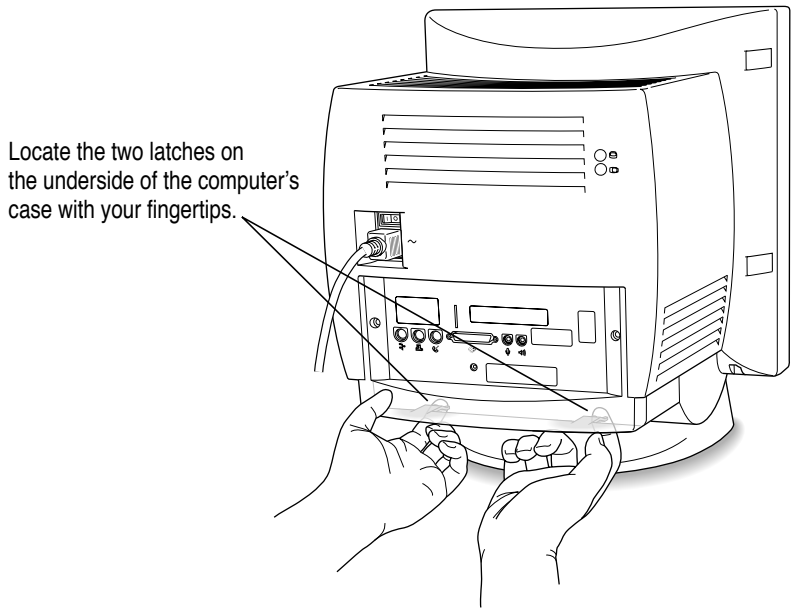
3 **Unplug all the cables except the power cord from the computer (including the cable that connects your keyboard to the computer).**

Leaving the power cord plugged in for now helps protect the computer from electrostatic discharge damage. (You'll unplug the power cord later.)

4 **Remove the three screws from the computer's back panel with a screwdriver.**



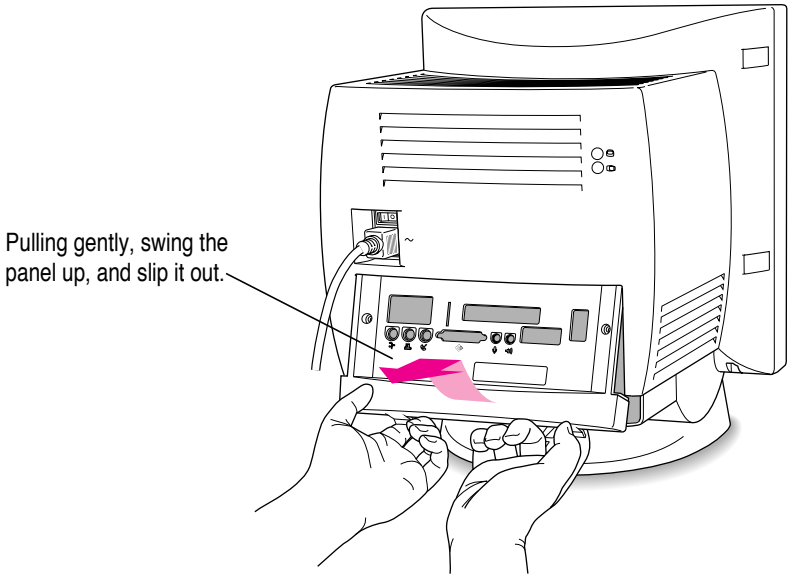
5 **With your fingertips, find the two latches on the underside of the computer's case.**



6 **Pull gently on the latches.**

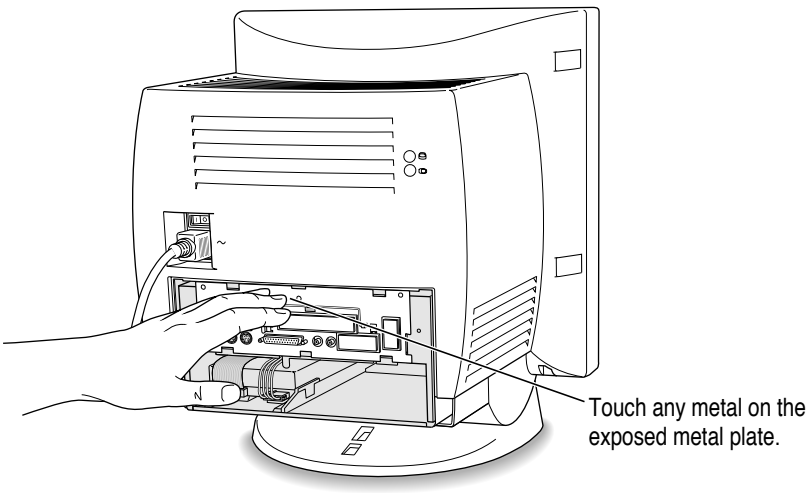
7 **Swing the panel up and slip it out.**

Set the panel aside.



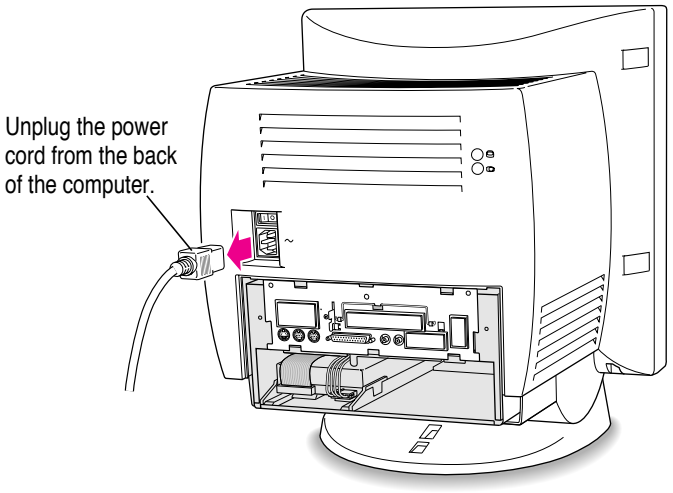
8 **Touch any flat area on the exposed metal plate to discharge static electricity.**

Always do this before you touch any parts, or install any components, inside the computer. This discharges static electricity from your body and helps protect components inside the computer from being damaged by static electricity discharge.



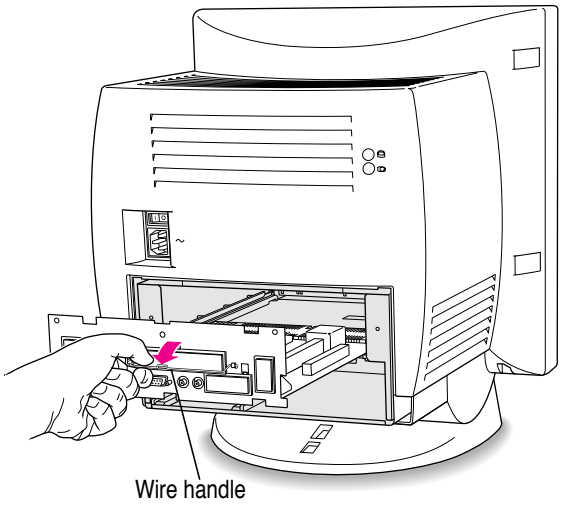
9 **Unplug the power cord from your computer.**

You can unplug the power cord now that you discharged static electricity in the previous step.

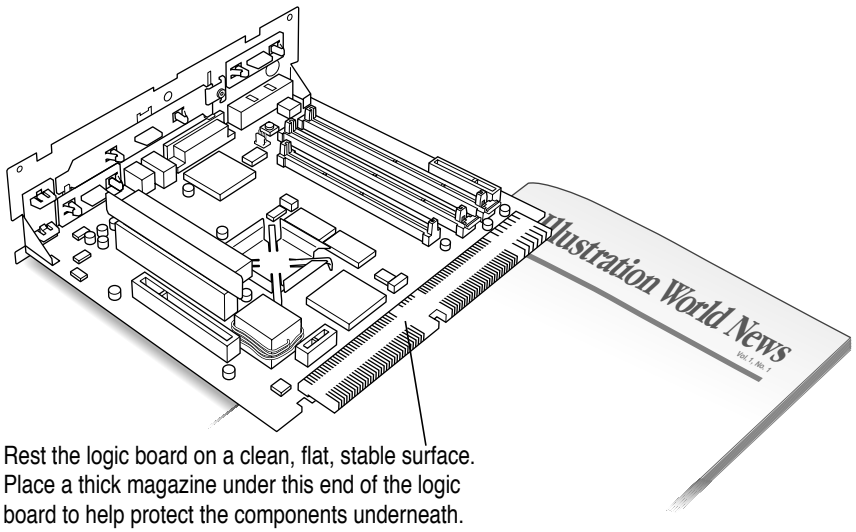


10 **Gently pull down on the wire handle and swing it out to unlock it from its storage position. Then grasp the handle and pull the logic board out of the computer.**

The vertical plate and the logic board to which it's attached slide all the way out of the computer. Carefully support the logic board as it comes out.



11 **Pull the logic board all the way out and set it on a clean, flat, stable surface. Rest the end of the board on a thick magazine or a thin book to protect the components underneath.**



Rest the logic board on a clean, flat, stable surface. Place a thick magazine under this end of the logic board to help protect the components underneath.

What you do next depends on whether you're installing a PCI card in the PCI slot or installing a modem or Ethernet card in the communication slot. Go to the section that pertains to the item you are installing.

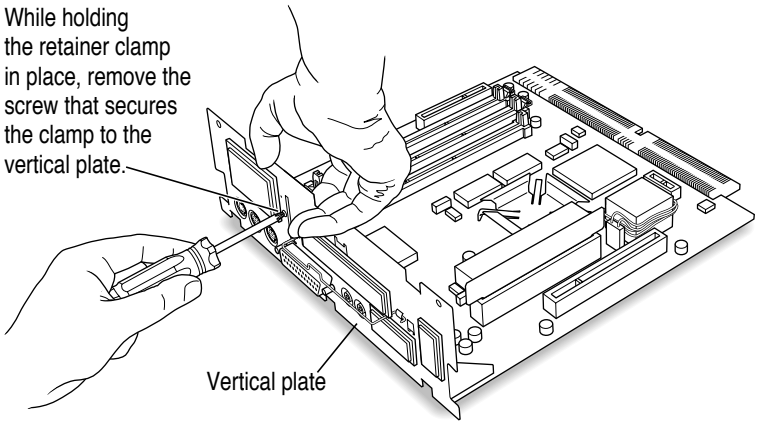
Installing a PCI card

This section contains instructions for installing a PCI card. PCI cards for your computer must not be longer than 6.88 inches.

Use these instructions in conjunction with the instructions that come with your PCI card:

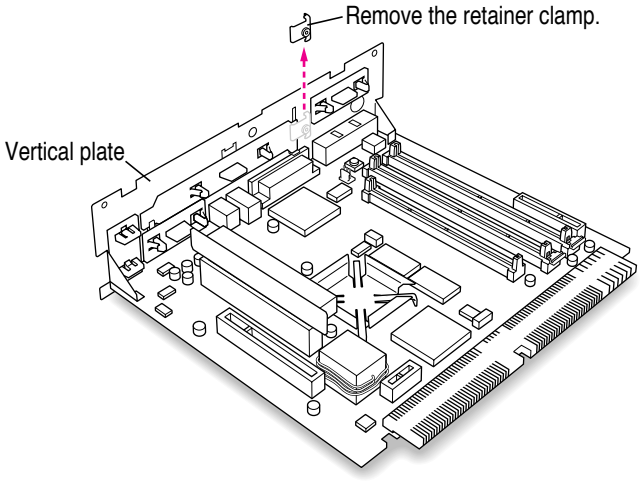
1 **Unscrew the retainer clamp screw from the front of the vertical plate, while holding the clamp in place in back of the vertical plate.**

Try not to let the retainer clamp fall onto the logic board.



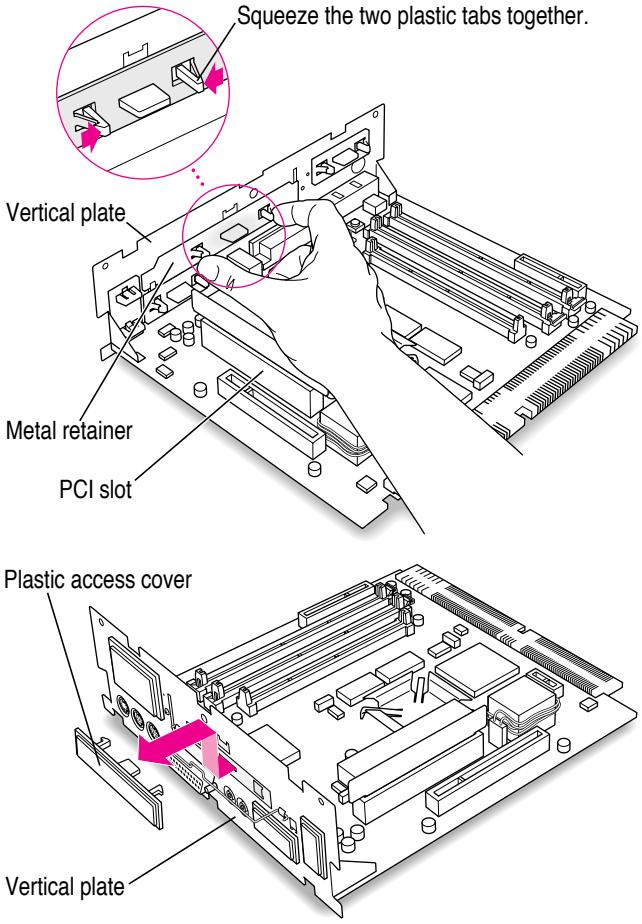
2 **Remove the retainer clamp and set it aside.**

You'll need the retainer clamp later, after you install the card.

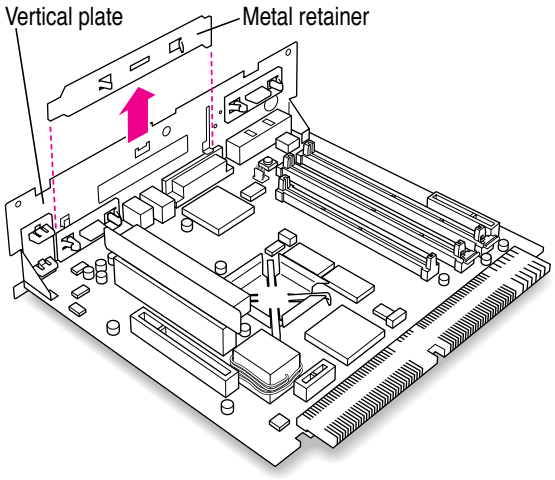


3 If your PCI card has ports for connecting equipment, remove the plastic access cover from the vertical plate.

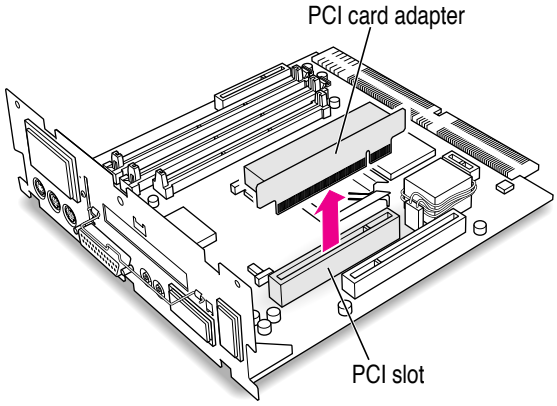
On the inside of the computer, squeeze together the two plastic tabs holding the access cover in place, then pull the access cover off from the outside.



4 **Remove the metal retainer from the inside of the computer.**



5 **Remove the PCI card adapter from the main logic board.**

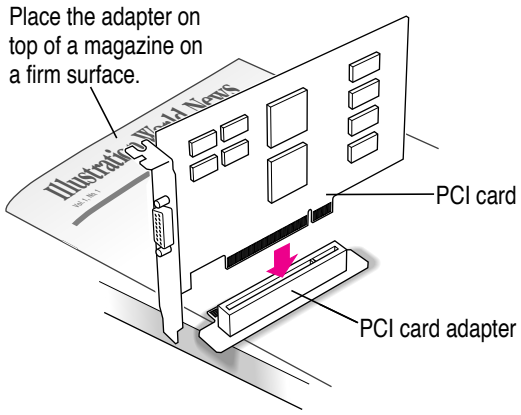


6 **Remove the PCI card from its static-proof bag.**

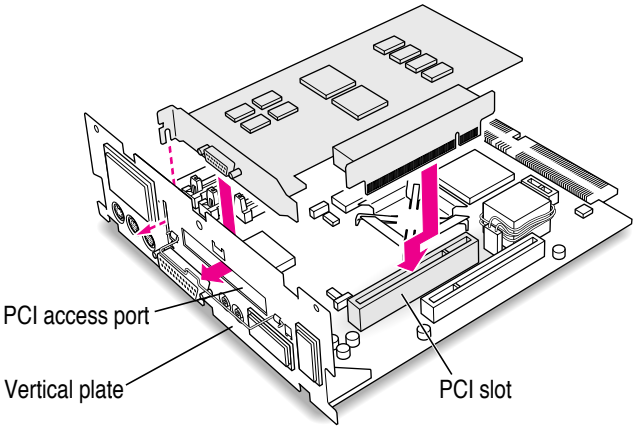
Hold the card by its edges to avoid touching any connectors on the card.

7 **Connect the PCI card and the PCI card adapter.**

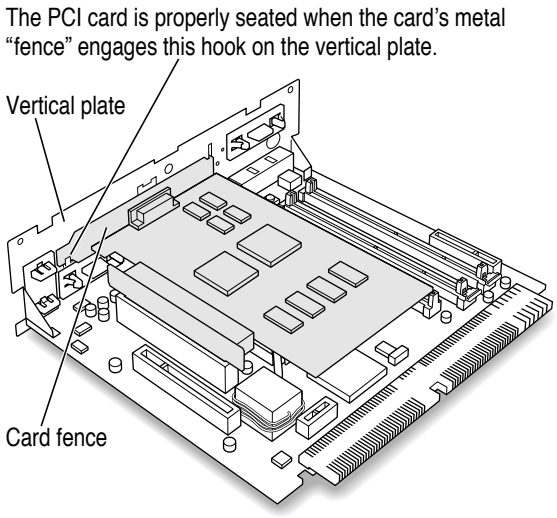
Place the adapter on a magazine on a firm surface, then press the card firmly into the adapter. You may find it helpful to place the card and adapter near the edge of a table with the metal edge of the card hanging over the end of the table so the edge does not block the card from being inserted completely into the adapter.



8 **Align the PCI card and adapter over the PCI slot.**

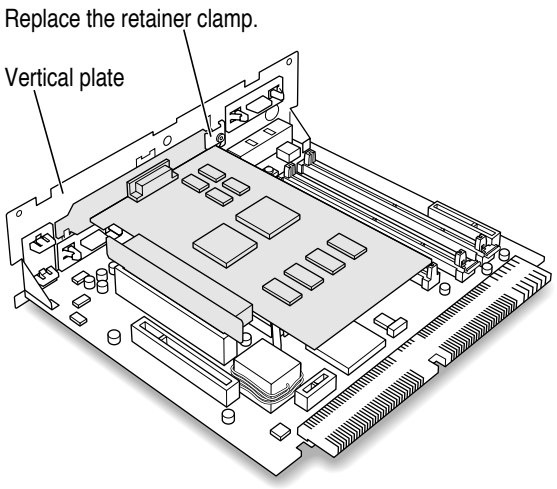


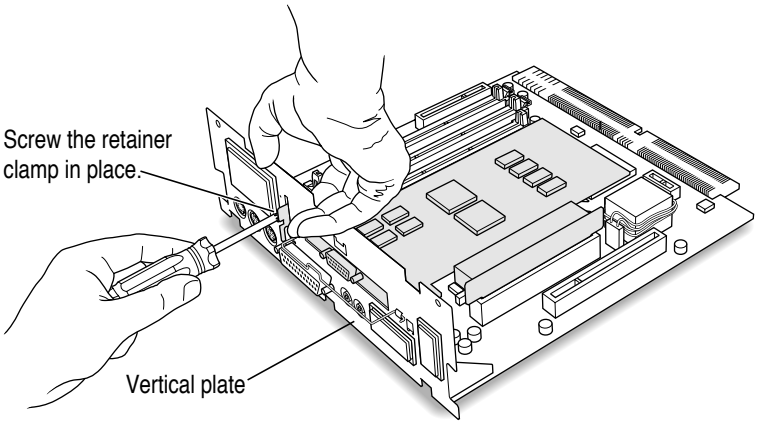
9 **Insert the adapter into the PCI slot on the main logic board. Make sure the metal fence on the PCI card engages the hook on the vertical plate and that any connectors on the front of the card protrude through the port opening in the vertical plate.**



Don't force the adapter. If you meet resistance, pull the adapter out and try again. To see if the adapter is properly connected, lift it gently. If it resists and stays in place, it's connected.

10 **Insert the retainer clamp back into the hole and hold it there while you screw it into place.**





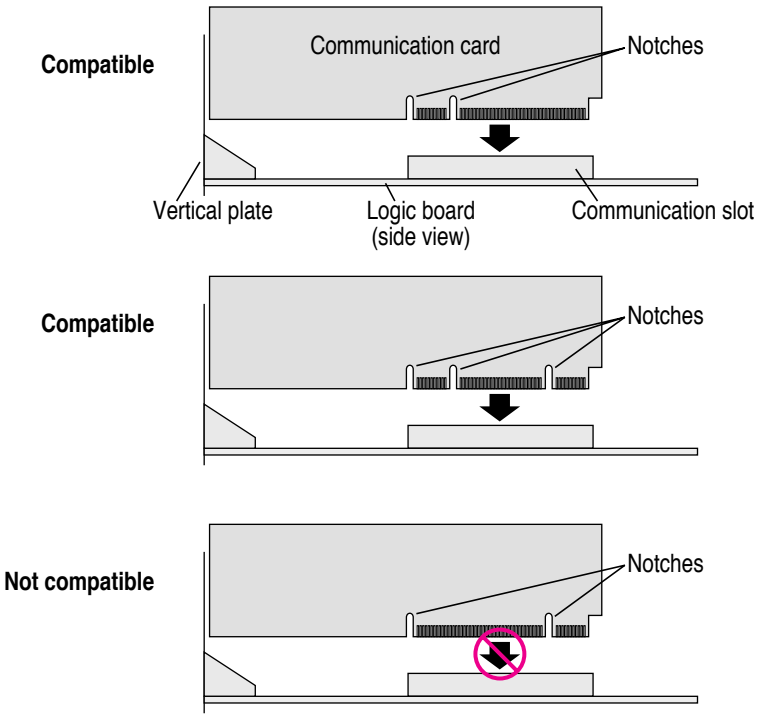
11 **If you have a communication card to install, go to the next section. If you are finished installing items in your computer, proceed to the section “Closing the Computer,” later in this appendix.**

Installing a communication card

This section contains instructions for installing an Ethernet or internal modem card in the communication slot in your computer.

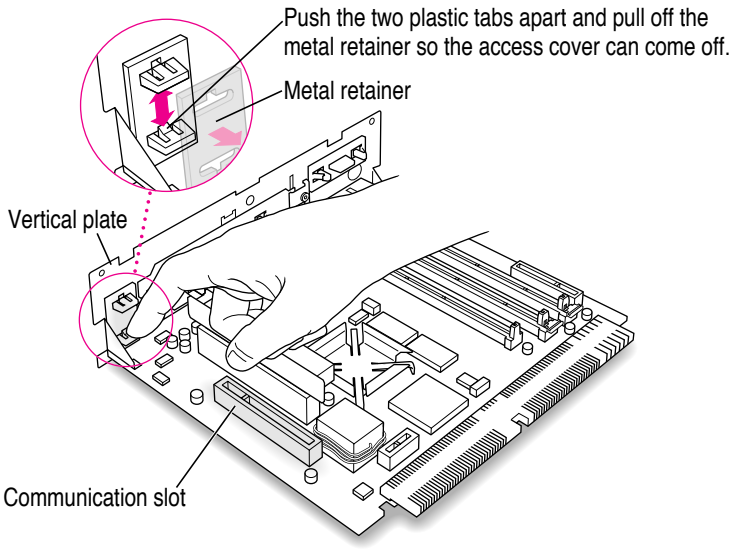
Note: Using a modem is not the same as being connected to a local area network. If you have an internal modem and the appropriate software that makes use of it, you already have access to online services. You do not need an Ethernet card unless you need to connect your computer to other computers in an Ethernet network. For more information about using an Ethernet card to connect to an Ethernet network, see "Connecting to an Ethernet Network" in Appendix D.

Some communication cards designed for other communication slots are not compatible with your computer and cannot be installed in its communication slot. You can tell by examining the placement of the notches on the card. Use the following illustration as a guide if you're not sure you have the correct type of card for the slot.



To install a communication card, follow these steps:

1 Remove the plastic access cover from the vertical plate.

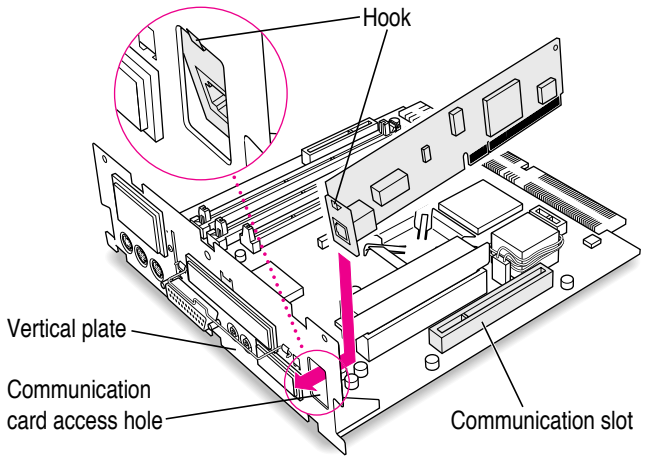


2 Remove the communication card from its static-proof bag.

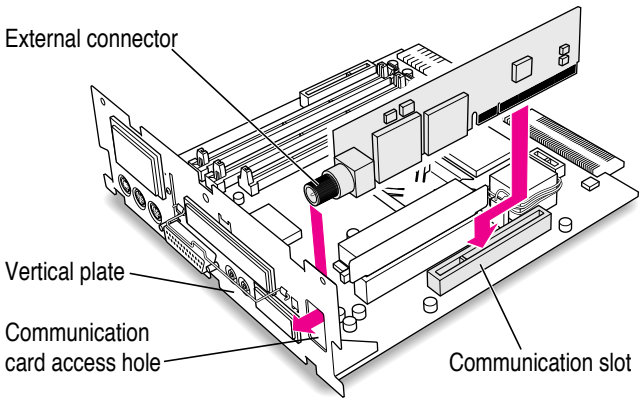
Hold the card by its edges to avoid touching the connectors on the card.

3 **Align the card over the communication slot.**

The communication slot is the rightmost slot on the logic board as you face the vertical plate. If your card has a hook on it (as shown here), be sure the hook engages the vertical plate when you insert the card in step 4.



If your card has a prominent external connector on it, simply pass it through the communication card access hole as shown here.



4 **Passing the external connector through the hole in the vertical plate, insert the card into the communication slot. Press down on the card until the connector is solidly in place.**

Don't force the card. If you meet resistance, pull the card out and try again.

5 **To see if the card is properly connected, lift it gently. If it resists and stays in place, it's connected.**

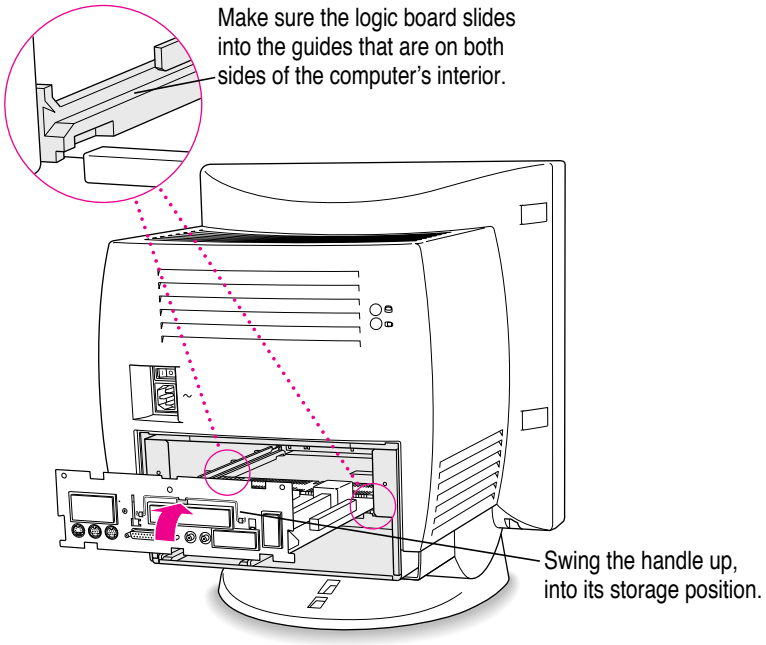
6 **If the communication card you installed is an Ethernet card, see if you need to install the software that comes with it. If you do need to, install it.**

7 **If you installed an Ethernet card, change the network connection in the Network control panel.**

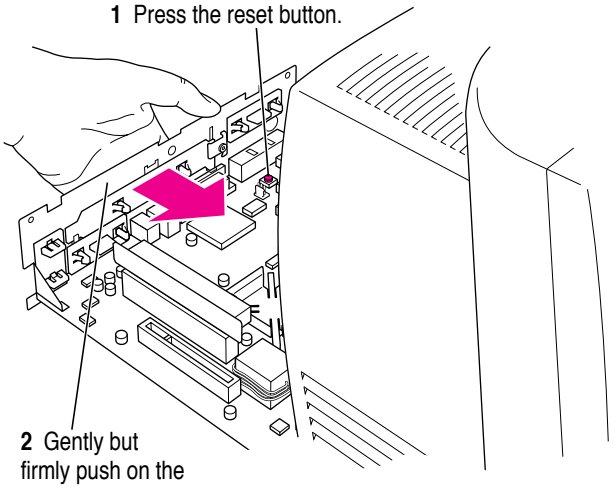
See the manual that came with the card for more information. For instructions on how to select a network connection and other information about using your Macintosh on a network, see the "Networks" topic of Macintosh Guide, available in the Guide (?) menu.

Closing the computer

1 **Slip the base of the logic board into the guide rails inside the computer's case and swing the wire handle back into its storage position.**



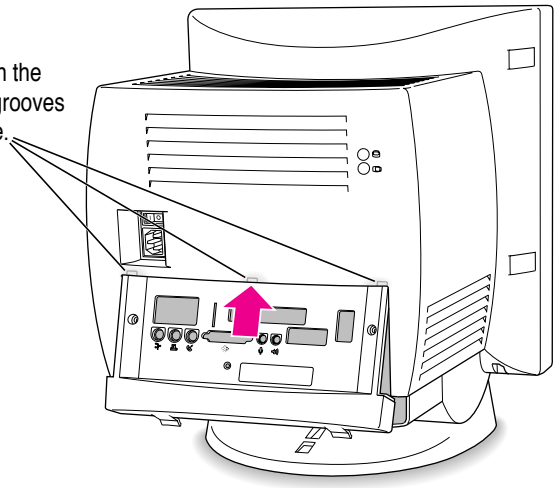
2 **Press the reset button on the logic board and then slide the logic board back into the computer.**



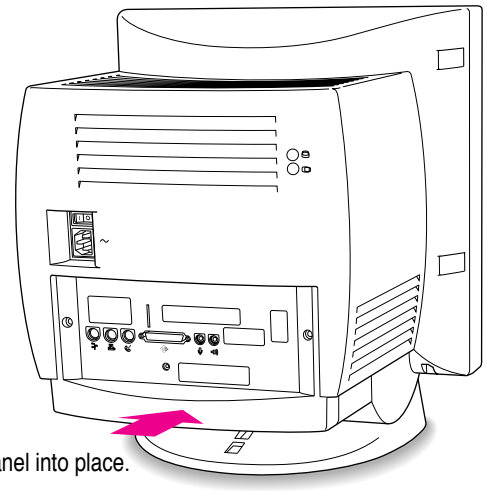
Note: When you press the reset button, some of your computer's software settings will change. You may want to open the control panels for the date and time, keyboard, and mouse to make sure that they are set the way you want them. For more information about working with control panels, see the "Customizing Your Computer" topic of Macintosh Guide, available in the Guide (?) menu.

3 **Slip the three tabs at the top of the back panel into the grooves in the computer's case.**

Slip the three tabs on the back panel into the grooves in the computer case.

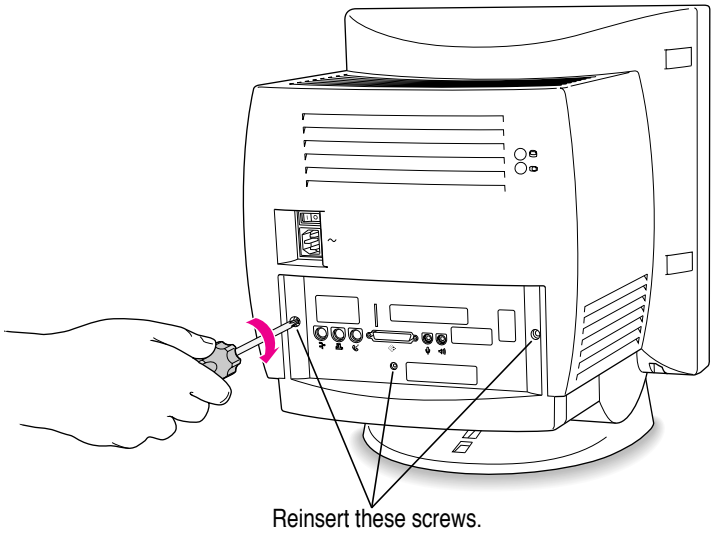


4 **Snap the base of the back panel into place.**

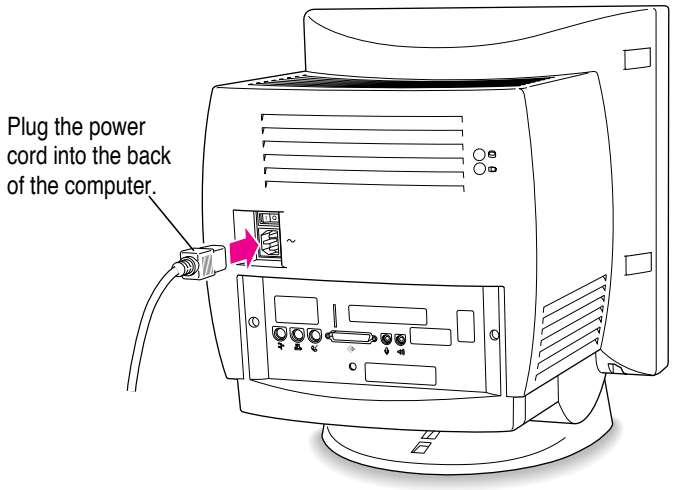


Snap the plastic back panel into place.

5 **Reinsert the three screws.**



6 **Reconnect the power cord.**



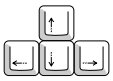
WARNING To ensure reliable and safe operation of your system, never turn on your computer unless all of its internal and external parts are in place.

Read this appendix to learn how to use the special keys on your keyboard.

Appendix C
Special Keys on Your Keyboard

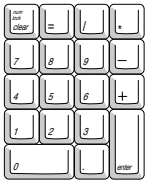
Your computer keyboard contains certain special keys that typewriter keyboards don't have. Many of these keys allow you to give commands to the computer without using the mouse. For example, in many application programs, pressing the ⌘ (Command) key at the same time as the Q key lets you quit a program.

The following table describes what you can do with the special keys on your keyboard. The special keys on your keyboard depend on the model of keyboard you have; some keyboards do not have all the keys listed.

Special keys on Apple keyboards		
Arrow keys		Use to move the insertion point, as an alternative to using the pointer. In some programs, the arrow keys have other functions.
Caps Lock key		Use to capitalize a series of letters (numbers and symbols aren't affected).
Clear key		Use to delete the current selection (or use the Delete key). In some programs, Clear has other functions.
⌘ (Command) key		Use in combination with other keys as an alternative to choosing a menu command.

continued ▶

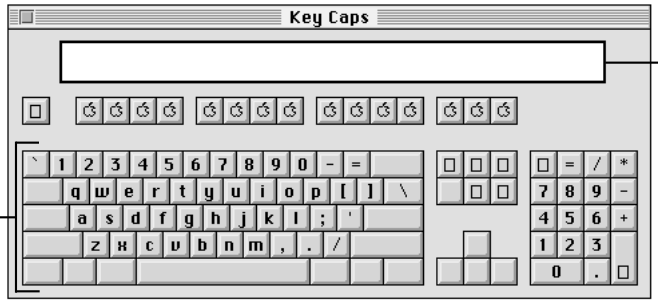
Special keys on Apple keyboards *(continued)*

Control key		In combination with other keys, this key provides shortcuts or modifies other actions.
Delete key		Use to delete selected material, or the character to the left of the insertion point.
Enter key		In a dialog box, pressing Enter is the same as clicking the outlined button. In some programs, pressing this key confirms information you have provided.
Escape key		The function of this key depends on the program you're using.
Function keys		Some programs allow you to use the 12 function keys to give commands. You can assign commands or action sequences to function keys with special utility programs.
Option key		Use in combination with other keys to produce special characters or modify actions.
Numeric keys		Use to produce numbers and mathematical symbols; some programs use these keys as function keys to initiate actions.
Power key		On some models, press to turn on the computer. Also press to shut down the computer on certain models.
Return key		Use to move the insertion point to the beginning of the next line. In a dialog box, pressing Return is the same as clicking the outlined button.
Shift key		Use to produce capital letters (or the upper character on the key).
Tab key		Use to move the insertion point to the next stopping place (such as a tab stop or field in a dialog box or program).
Other special keys		The function of these keys depends on the operating system and program you're using.

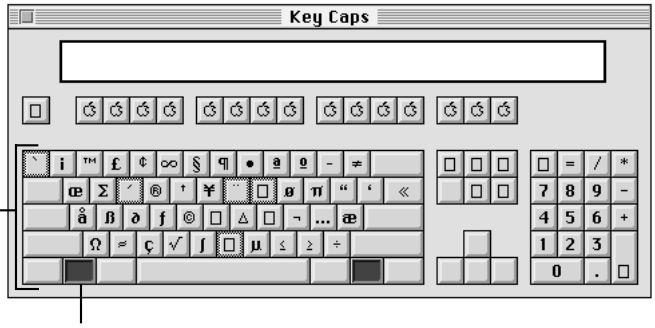
Typing special characters and symbols

You can type a variety of international and other special symbols and characters (including characters with diacritical marks, such as accents) by pressing combinations of keys.

The Key Caps program, which is installed with your system software, shows you the characters produced when you type certain keys and key combinations in the fonts available on your computer. Choose Key Caps from the Apple ( ) menu, then choose the font from the Key Caps menu.



To have Key Caps show more options for special characters, press each of these keys or key combinations: Option, Shift, Shift-Option, Shift-⌘, and Option-⌘.



If you press the Option key, Key Caps outlines lightly the keys that you can use in combination with letter keys to type letters with accents or other diacritical marks.

If you see rectangles: If you see rectangles instead of diacritical marks on some of the pictures of keys in Key Caps, try pressing Option-⌘ to see the diacritical marks. However, use the Option key (not Option-⌘) in combination with the other keys to type letters with diacritical marks.

If you press the Option key at the same time as a key for a specific diacritical mark and then release both keys, Key Caps outlines in bold the keys for letters that can be typed with that mark. (You'll see that most key combinations for diacritical marks can be used with the Space bar as well as letter keys—producing the mark without a letter.)

The most common diacritical marks and how to create them are summarized next.

Diacritical mark	Key combination
Grave accent (`)	Option–`, then type the character
Acute accent (´)	Option–e, then type the character
Circumflex (^)	Option–i, then type the character
Tilde (~)	Option–n, then type the character
Umlaut (¨)	Option–u, then type the character
The letter "c" with a cedilla (ç)	Option–c

- **To type a letter or a space with a specific diacritical mark, press the Option key and the key for the mark simultaneously. Then type the letter that needs the mark.**

If you are having trouble getting a mark and letter to appear together, try again. Be sure to press the Option key before (or at the same time as) the key for the mark; then, after you release both keys, type the letter to be marked.

Special key combinations

If difficulties with your mouse or computer don't allow you to use standard methods of quitting a program or restarting your computer, you can try using these special key combinations.

To do this …	… press this key combination
Force a program to quit	⌘-Option-Esc
Force the computer to restart	⌘-Control–Power key
Start the computer from a CD-ROM disc	C key (at startup)
Ignore the selected startup device	⌘-Option-Shift-Delete
Turn off system extensions	Shift key (while starting up)
Start the Extensions Manager	Space bar (while starting up)
Rebuild the desktop	Option-⌘ (while starting up)

Read this appendix only if you purchased an Ethernet card or a second monitor.

Appendix D
If You Purchase Additional Equipment

This chapter contains information that is useful only if you purchase

- an Ethernet card
- a second monitor

Connecting to an Ethernet network

This section contains information only for people whose computers are connected to other computers through a local area network. A local area network enables computers to communicate with each other—for example, in businesses, it is what enables more than one computer to share a printer and access documents on a central, shared server.

Note: Using a modem is not the same as being connected to a local area network. If you have an internal modem and the appropriate software that makes use of it, you already have access to online services. You do not need an Ethernet card unless you need to connect your computer to other computers in an Ethernet network.

If you buy and install an Ethernet card, you can connect your Macintosh to an existing high-speed Ethernet network that uses thin coaxial cables, 10BASE-T twisted pair cables, thick coaxial cables, or other standard cables. To install an Ethernet card, follow the instructions in "Installing a Communication Card" in Appendix B.

Depending on the type of cables used in the Ethernet network you're connecting to, you may need to purchase an Apple Ethernet media adapter or other compatible media adapter to connect your Macintosh to a network. (Consult the service and support information that came with your computer for instructions on how to contact an Apple-authorized service provider or Apple for more information on Apple Ethernet media adapters.)

To use Ethernet, you need to change the network connection in the Network control panel. (For instructions on how to select a network connection and other information about using your Macintosh on a network, see the "Networks" topic of Macintosh Guide, available in the Guide [?] menu.)

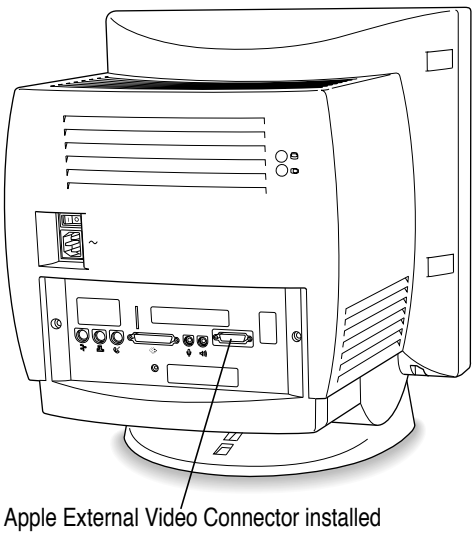
IMPORTANT Your Macintosh supports EtherTalk Phase 2 (AppleTalk Phase 2 Protocols for Ethernet networks) and TCP/IP (via the TCP/IP protocol) but not EtherTalk Phase 1 (AppleTalk Phase 1 protocols for Ethernet networks). To use TCP/IP, you must set up the MacTCP control panel. (See the "Networks" topic of Macintosh Guide, available in the Guide [?] menu, for instructions on how to make a TCP connection.) Non-Apple products that you can use to communicate over Ethernet using protocols are also available.

Note: The use of an Ethernet card will make your Macintosh a Class A computing device, according to FCC regulations.

Connecting a second monitor for video mirroring

You can connect a second, external monitor to your computer to display the same images that are on the computer's built-in monitor. Displaying your computer's images on a second monitor, called *video mirroring,* is useful for presentations.

If you want to use video mirroring, you need the Apple External Video Connector with an external monitor attached. If your computer doesn't have a connector installed, you can purchase the connector kit from an Apple-authorized dealer and install it following the instructions that come with it.



Apple External Video Connector installed

The external monitor must use the same resolution and timing (refresh rate) as the built-in monitor. Depending on what type of monitor you have added, you may need to change the built-in monitor's setting to one that the external monitor is capable of displaying. This is done with the Monitors & Sound control panel in the Control Panels folder in the Apple (🍎) menu.

If you want to display your built-in monitor's images on a standard TV or record them using a VCR, you'll need the Apple Presentation System, which adds these capabilities when used with the Apple External Video Connector kit. The Apple External Video Connector kit and the Apple Presentation System are available for purchase from computer stores.

For more information about the monitors that you can connect to your computer for video mirroring, see the *Technical Information* booklet that came with your computer.

Read this appendix to learn how to install additional memory in your computer.

Appendix E
Installing Additional Memory

You can install additional memory—dynamic random-access memory (DRAM)—in your computer. DRAM allows you to work with more programs and larger documents. Additional memory comes in packages called Dual Inline Memory Modules, or DIMMs. Altogether, you can install a maximum (total) of 136 megabytes (MB) of memory in this Macintosh model. You can also install an optional High Performance Module (level 2 memory cache) in the cache slot in your computer for additional processing power.

WARNING Although instructions for installing DIMMs and a High Performance Module are provided in this manual, Apple Computer strongly recommends that you have an Apple-certified technician install additional DRAM or High Performance Modules (for a fee). Consult the service and support information that came with your computer for instructions on how to contact an Apple-authorized service provider or Apple for service. If you install additional DIMMs yourself, you risk damaging your equipment, and this damage is not covered by the limited warranty on your computer. See an Apple-authorized dealer or service provider for additional information about this or any other warranty question.

For more information about memory, see the "Memory" topic of Macintosh Guide, available in the Guide (?) menu.

You should have an Apple-certified technician install additional DRAM for you. However, you may feel comfortable installing DRAM yourself.

- If you want to install additional DRAM yourself, you must purchase the memory chips, or DIMMS, from an Apple-authorized dealer. Then follow the instructions in this appendix.
- If you want an Apple-certified technician to install additional DRAM for you, see the service and support information that came with your computer for instructions on how to contact an Apple-authorized service provider or Apple for service.

DRAM configurations

Your computer can use any DRAM configuration with DIMMs of these sizes: 8 MB, 16 MB, 32 MB, or 64 MB. The exact configuration depends on the density of the DRAM chips that are mounted on the DIMMs. Use only DIMMs that support a 1K or 2K refresh count. Do not use DIMMs that support a 4K refresh count.

You can increase your computer's DRAM to up to a maximum of 136 MB. Your computer already comes with 8 MB soldered on your computer's main logic board plus 8 MB installed in one of the DIMM slots, for a total of 16 MB of DRAM. One DIMM slot remains for installing an additional 8-MB, 16-MB, 32-MB, or 64-MB DIMM, for a total of 24 MB, 32 MB, 48 MB, or 80 MB of DRAM, respectively. (If you want to install the maximum amount of memory, you need to replace the 8-MB DIMM already installed in one of your DIMM slots with a 64-MB DIMM, and then install a 64-MB DIMM in the remaining slot, for a total of 136 MB of DRAM.)

IMPORTANT The DIMMs should be 64-bit wide, 168-pin fast-paged mode, with 70-nanosecond (ns) RAM access time or faster and a 1K or 2K refresh count. The Single Inline Memory Modules (SIMMs) from older Macintosh computers are not compatible with your computer and should not be used. DIMMs that support a 4K refresh count also should not be used.

If you decide to have additional DRAM installed in your computer, the DIMMs can be installed one at a time in any order in either of the memory slots.

High Performance Module configurations

A High Performance Module (level 2 memory cache) provides an overall increase in your computer's performance. Although the megahertz processor speed stays the same when you install a High Performance Module (see your *Technical Information* booklet for the exact speed), your computer performs tasks significantly faster with a High Performance Module installed. You can add a High Performance Module by installing the module on the main logic board of your computer.

Installing the DIMM or High Performance Module

Installing memory involves three steps:

- opening the computer
- inserting the DIMM or High Performance Module into a specific slot
- closing the computer

Opening the computer

IMPORTANT To avoid generating static electricity that may damage components, do not walk around the room until you have completed the installation of the expansion card or memory and closed the computer. Additionally, move the logic board as little as possible while it is outside the computer case.

1 **Shut down your computer by choosing Shut Down from the Special menu.**

You can also press the Power key on the keyboard.

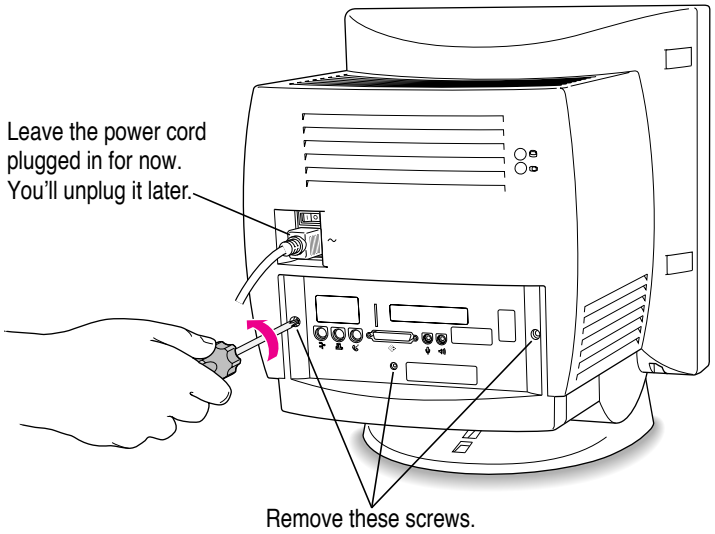
2 **Turn the computer completely off by pressing the power switch at the back of the computer.**

Press the side of the switch marked with the ○ symbol.

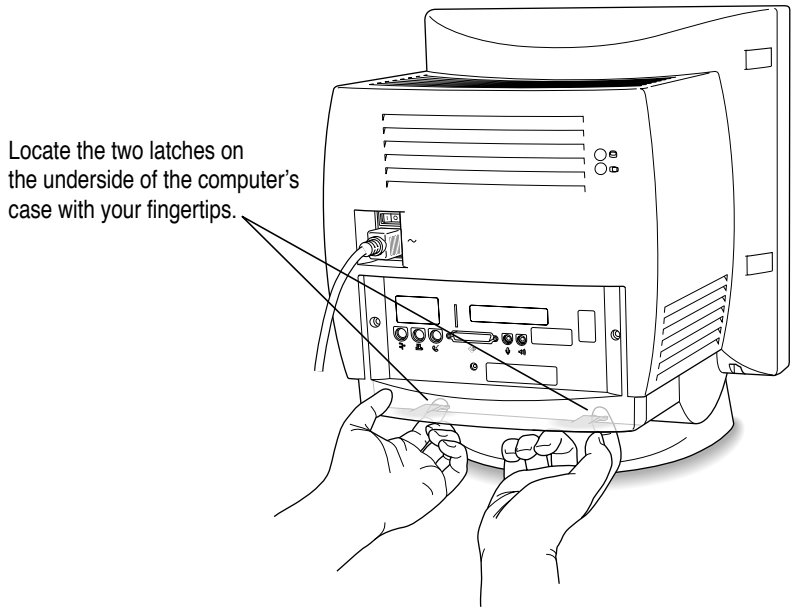
3 **Unplug all the cables except the power cord from the computer (including the cable that connects your keyboard to the computer).**

Leaving the power cord plugged in for now helps protect the computer from electrostatic discharge damage. (You'll unplug the power cord later.)

4 **Remove the three screws on the computer's back panel with a screwdriver.**



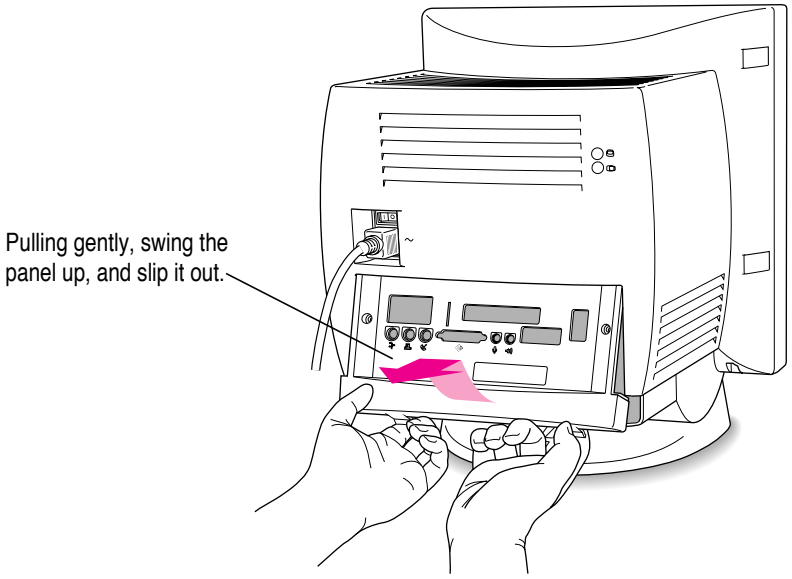
5 **With your fingertips, find the two latches on the underside of the computer's case.**



6 **Pull gently on the latches.**

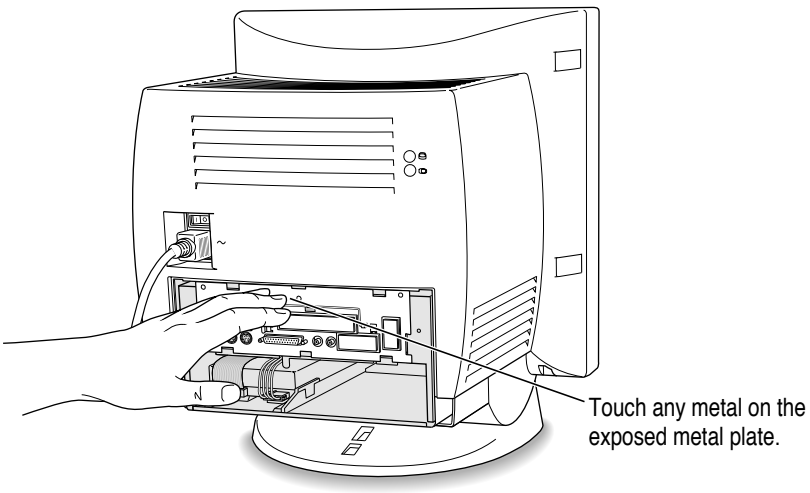
7 **Swing the panel up and slip it out.**

Set the panel aside.



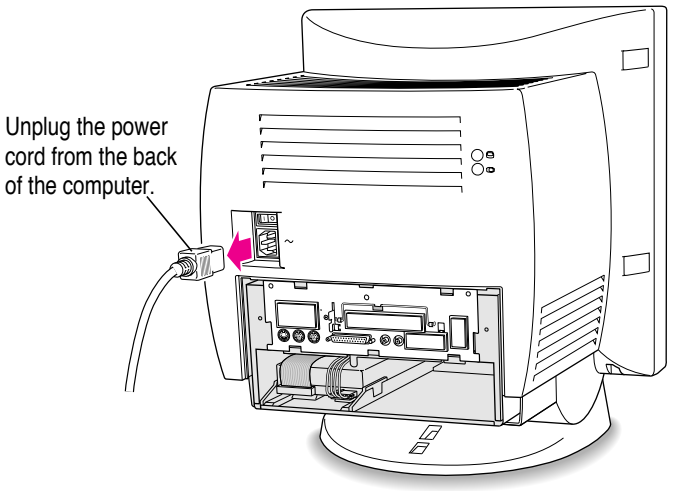
8 **Touch any flat area on the exposed metal plate to discharge static electricity.**

Always do this before you touch any parts, or install any components, inside the computer. This discharges static electricity from your body and helps protect components inside the computer from being damaged by static electricity discharge.



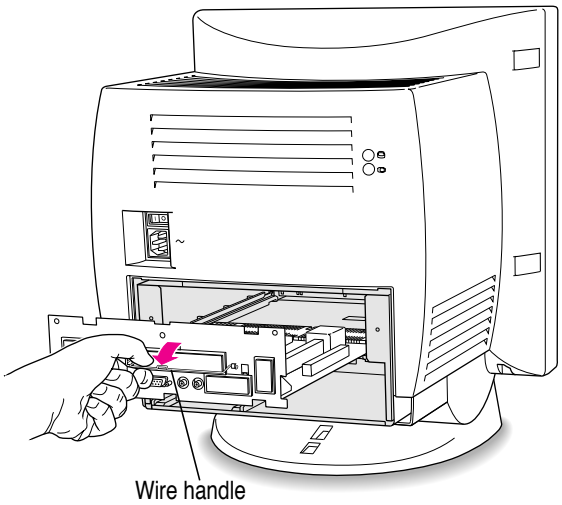
9 **Unplug the power cord from your computer.**

You can unplug the power cord now that you discharged static electricity in the previous step.

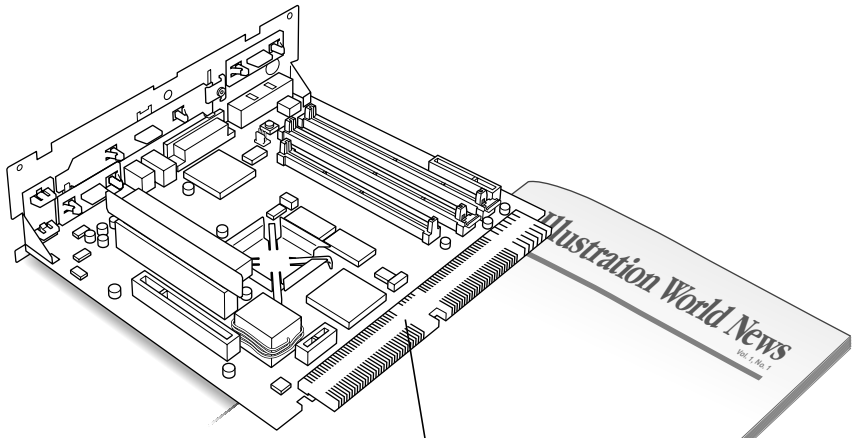


10 **Gently pull down on the wire handle and swing it out to unlock it from its storage position. Then grasp the handle and pull the logic board out of the computer.**

The vertical plate and the logic board to which it's attached slide all the way out of the computer. Carefully support the logic board as it comes out.



11 **Pull the logic board all the way out and set it on a clean, flat, stable surface. Rest the end of the board on a thick magazine or a thin book to protect the components underneath.**

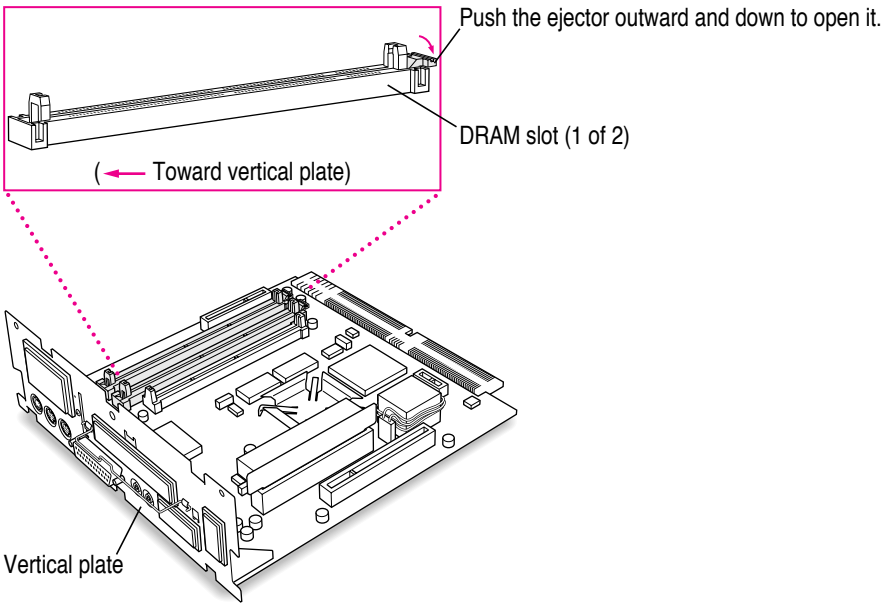


Rest the logic board on a clean, flat, stable surface. Place a thick magazine under this end of the logic board to help protect the components underneath.

What you do next depends on whether you're installing a DRAM DIMM or a High Performance Module. Skip to the section that pertains to the item you are installing.

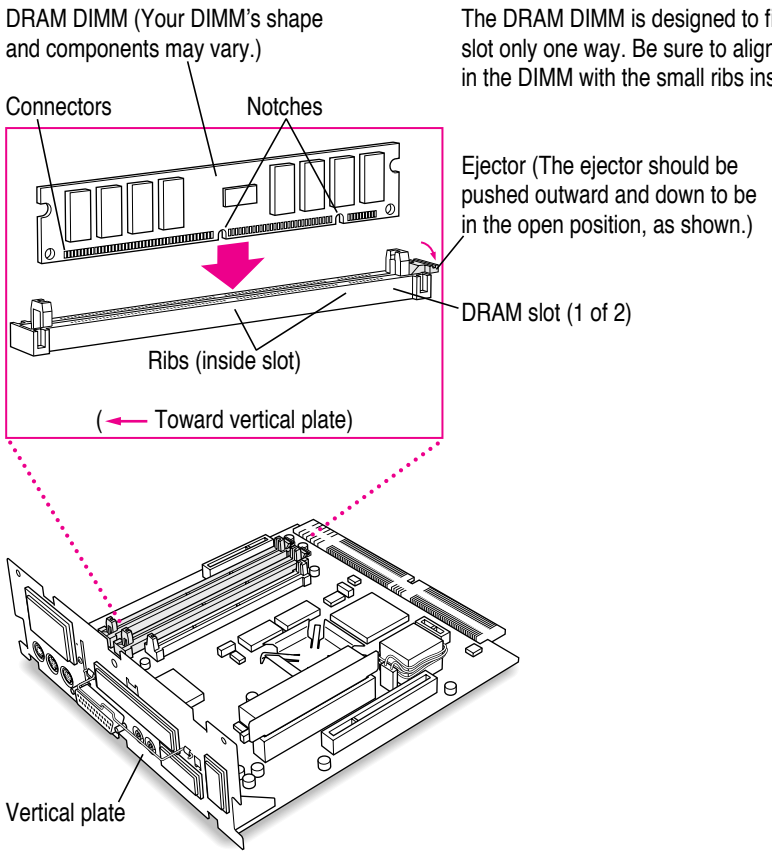
Installing a DRAM DIMM

1 **Push the ejector on the DRAM slot outward and down to open it.**



2 **With the ejector in the “open” position, align the DRAM DIMM in the DRAM sockets as pictured.**

IMPORTANT Do not touch the DIMM’s connectors. Handle the DIMM only by the edges.



3 **Push down on the DIMM until it snaps into place.**

The ejector closes automatically.

4 **Repeat steps 1–3 if you have another DRAM DIMM to install into the other slot.**

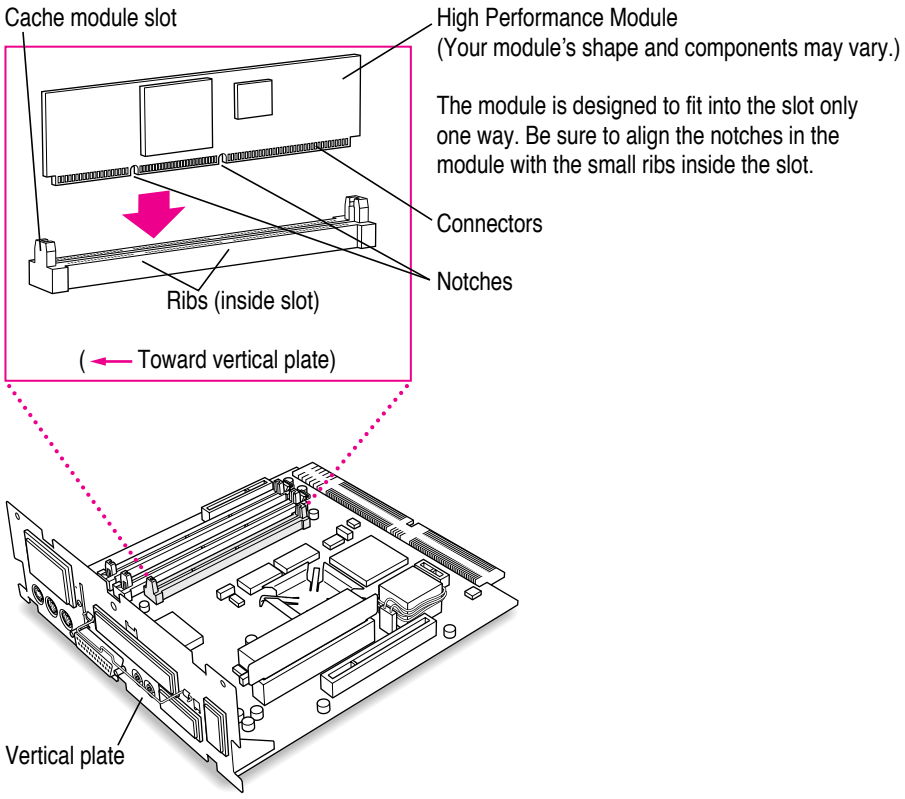
5 **If you have a High Performance Module to install, proceed to the next section, “Installing a High Performance Module Into the Cache Module Slot.” If you are finished installing memory in your computer, proceed to “Closing the Computer.”**

Installing a High Performance Module into the cache module slot

1 **Aligning the notches in the module with the small ribs inside the cache module slot, insert the module in the slot as pictured.**

The module is designed to fit into the slot only one way. Be sure to align the notches in the module with the small ribs inside the slot.

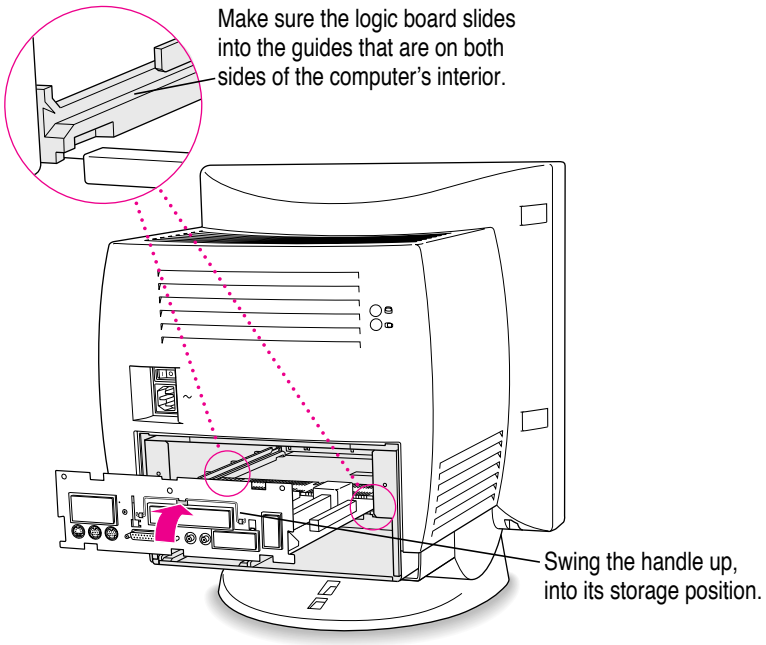
IMPORTANT Do not touch the module's connectors. Handle the module only by the edges.



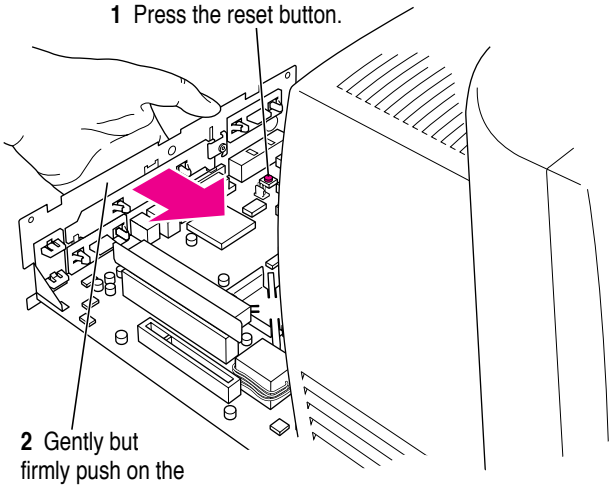
2 **If you are finished installing items in your computer, proceed to "Closing the Computer."**

Closing the computer

1 **Slip the base of the logic board into the guide rails inside the computer's case and swing the wire handle back into its storage position.**



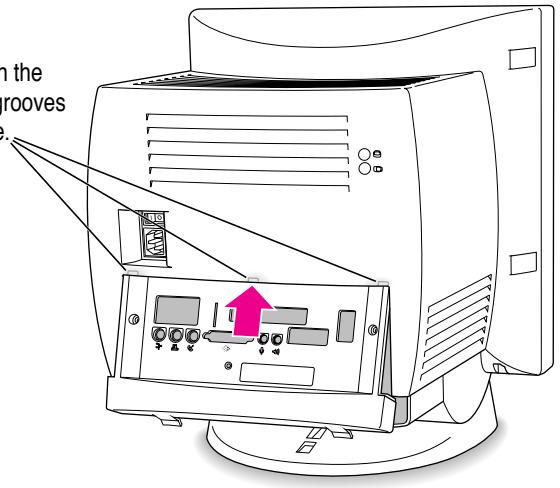
2 **Press the reset button on the logic board and then slide the logic board back into the computer.**



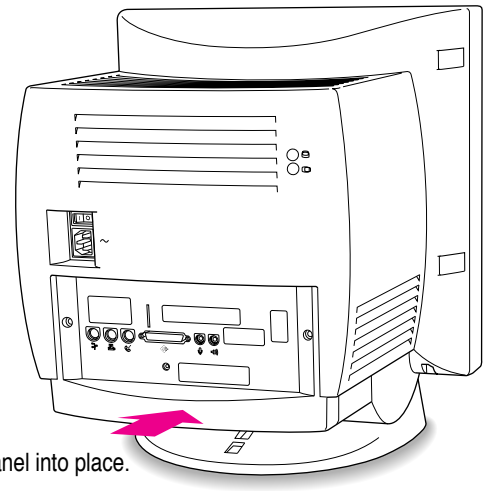
Note: When you press the reset button, some of your computer's software settings will change. You may want to open the control panels for the date and time, keyboard, and mouse to make sure that they are set the way you want them. For more information about working with control panels, see the "Customizing Your Computer" topic of Macintosh Guide, available in the Guide (?) menu.

3 **Slip the three tabs at the top of the back panel into the grooves in the computer's case.**

Slip the three tabs on the back panel into the grooves in the computer case.

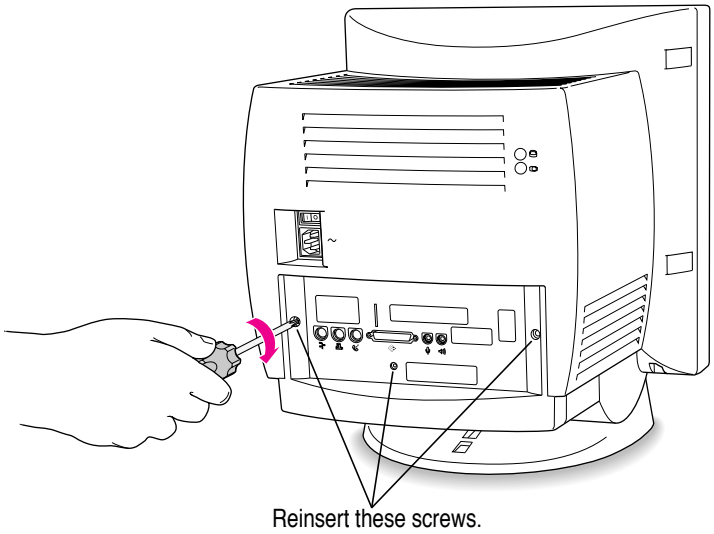


4 **Snap the base of the back panel into place.**

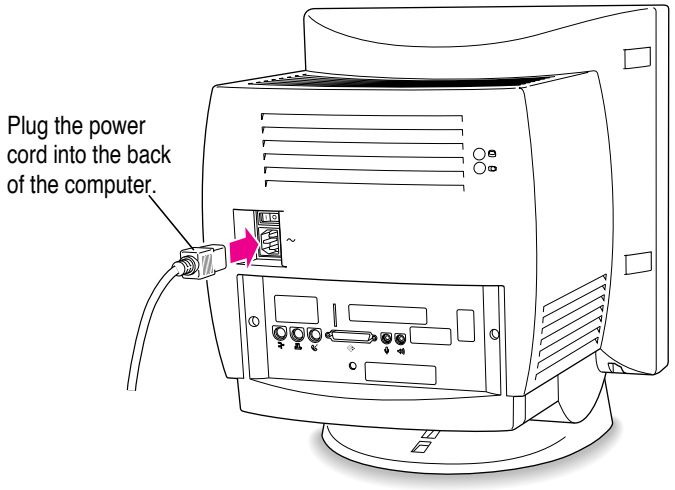


Snap the plastic back panel into place.

5 **Reinsert the three screws.**



6 **Reconnect the power cord.**



WARNING To ensure reliable and safe operation of your system, never turn on your computer unless all of its internal and external parts are in place.

If you can't find what you're looking for in this index, look in Macintosh Guide—available in the Guide (?) menu on your computer.

Index

A

accent marks, typing 140
AppleCD Audio Player program 53, 56
Apple customer support hotline 19
Apple Desktop Bus (ADB) port
  connecting keyboard cable to 7
  connecting mouse cable to 6
  location of 35
  purpose of 34
Apple Ethernet media adapter 144
Apple External Video Connector kit 118, 146
Apple Extras folder
  preinstalled programs in 46
  Read Me files in 19
Apple menu. *See also* control panels
  AppleCD Audio Player 56
  Key Caps 139–140
  Shut Down command 17
Apple Presentation System 146
AppleTalk Phase 2 Protocols for Ethernet networks 144
Apple Video Player program 46
application icon 16, 48, 62
Application menu 16
  active programs listed in 47–48
  Show All command 48
application programs
  AppleCD Audio Player 56
  Apple Presentation System 146
  Apple Video Player 45
  backup copies of 49
  designed for older Macintoshes 50, 75
  designed for PowerPC microprocessor 50, 75
  determining which are open 48
  dimmed icons for 48
  Disk First Aid 87
  displaying windows in 48
  Drive Setup 66, 86, 89
  guidelines for 47
  increasing memory to run several 48
  installing 46–47
  Key Caps 139–140
  memory used by 50, 69
  opening 45, 69, 75
  preinstalled 45
  putting in the Launcher 47
  quitting 61, 69, 137, 141
  Restore All Software 98
  Restore System Software 95–97
  screen saver 108
  switching between 48
  system error and 70

application programs *(continued)*
troubleshooting 47, 69–70, 73, 75, 77
working with several at a time 47–48
arrow keys 137
arrow on screen. *See* pointer
arrows, scroll 16
At Ease (alternative to Macintosh desktop) 74, 76
audio. *See* sound
audio CDs
ejecting 54
playing 55–56
troubleshooting 80–81
audio tracks on CD-ROM discs
playing 55–56
troubleshooting 80–81

B

backing up information on a disk 49
backup programs on *Macintosh Performa CD* 45
Balloon Help 30
blinking question mark on the screen 64, 92
bomb icon 59, 61, 70
"burn-in" on screen, avoiding 108

C

cables
Ethernet cables 143–144
handling 107
keyboard cable 7
mouse cable 6
SCSI cables 40–42
SCSI peripheral interface cable 40
SCSI system cable 40
cache module. *See* High Performance Module
cache module slot 117, 156
cache specifications 161
Caps Lock key 137
cards
communication card 130–133
Ethernet card 133, 143
expansion card 117–136
TV tuner card 34, 35, 45
video input card 34, 35, 45
caret prompt on screen 75
carrying the computer 2
case
cleaning 112
closing 133–136, 157–160
opening 119–122, 149–152
CD-ROM disc icon 53
CD-ROM discs. *See also* CD-ROM drive; *Macintosh Performa CD*
At Ease desktop alternative on 76
audio CDs 55–56, 80–81
audio tracks on 55–56, 80–81
capacity of 51
cleaning 79, 109
copying files from 47, 54
ejecting 53–54, 79
file formats for 54–55
handling 109–110
inserting into drive 52–53
installing from 47
opening documents on, troubleshooting 79
Photo CDs 55, 56–58
polishing 79
safety precautions for 109–110
sharing over network 58
small (8 cm) discs 52
starting up from 76, 85–86
that came with your computer 54
troubleshooting 78–81, 85–86
types available 51, 54–55

CD-ROM drive 51–58. *See also* CD-ROM discs
cleaning lens on 110
closing 53
discs compatible with 51
ejecting disc from 53–54
inserting disc into 52–53
Open/Close button for 52
opening tray of 52–53, 77
safety precautions for 110
SCSI ID number for 39
spills on 110
troubleshooting 76–81
cleaning
CD-ROM discs 79, 109
CD-ROM drive lens 110
computer case 112
monitor 112
mouse 71, 112–113
screen 105
spills 107, 108, 110
Clear key 137
clock/calendar, troubleshooting 64
closing
CD-ROM drive tray 53
computer 133–136, 157–160
Macintosh Guide 29
windows 16
Command key 137
commands
Drive Setup Guide (Guide menu) 66
Eject CD (File menu) 54
Empty Trash (Special menu) 16
Hide Balloons (Guide menu) 30
keyboard 141–145
Macintosh Guide (Guide menu) 22
menus of 15
Open (File menu), shortcut for 31
Put Away (File menu) 54
Quit (File menu) 61
Restart (Special menu) 61
Shortcuts (Guide menu) 31
shortcuts for. *See* shortcuts
Show All (Application menu) 48
Show Balloons (Guide menu) 30
Shut Down (Apple or Special menu) 17
communication card
compatible vs. incompatible 130
Ethernet card 133
installing 130–133
communication card access cover 35
communication slot 117, 132
communications regulation information vii
compact discs. *See* CD-ROM discs
connecting
cables 107
connector into port 107
external SCSI devices 39–42
keyboard 7
monitor, external 145–146
mouse 6
power cord 3, 4
SCSI devices 39–42
to Ethernet network 143–144
connectors
plugging into port 107
video connector 145
contrast of screen 37
Control key 138
Control Panels (Apple menu)
Extensions Manager control panel 62, 63
incompatible 69–70
Memory control panel 50, 69
Monitors & Sound control panel 36, 37, 145
Network control panel 144
PC Exchange control panel 67, 74
copying
information on a disk 48–49
Macintosh Performa CD files to hard disk 100
cumulative trauma disorders 102
cursor. *See* pointer
customer support hotline 19

D

Delete key 138
delete program accidentally, help on 45, 75, 100
desk accessories
  switching between 48
  working with several at a time 47–48
desktop
  alternative to (At Ease) 76
  appearance of 10
  hard disk icon does not appear on 66–67
  hiding and showing windows on 48
  rebuilding 62–63, 67, 141
device drivers for SCSI devices 42
diacritical marks, typing 140
dialog boxes 61
DIMMs. *See* DRAM DIMMs
disc drive. *See* CD-ROM drive
discs. *See* CD-ROM discs; *Macintosh Performa CD*
disk drives. *See* floppy disk drive; hard disk
Disk First Aid program 87–88
disk icon
  with blinking question mark 64, 92, 93
  with X 65
disks. *See* floppy disks; hard disk
display. *See* screen
document icon 16
documents
  copying 48–49
  documents folder 19
  DOS, troubleshooting 73–74
  opening on CD-ROM disc 79
DOS disks, troubleshooting 67–68
DOS documents, troubleshooting 73–74
DRAM configurations 148–149
DRAM DIMMs. *See also* memory
  handling 156
  installing 154–155
DRAM DIMM slots 117, 154–155
drivers for SCSI devices 42
Drive Setup Guide command (Guide menu) 66
Drive Setup program on *Macintosh Performa CD* 66, 86, 89
Dual Inline Memory Modules (DIMMs). *See* DRAM DIMMs
dynamic random-access memory. *See* DRAM

E

Easy Access, turning off 72
Eject CD command (File menu) 54
ejecting
  audio CDs 54
  CD-ROM discs 54, 79
  floppy disks 68, 111
electrical hazards, avoiding 3, 4
electromagnetic emissions 105
Empty Trash command (Special menu) 16
Enter key 138
erasing disks. *See* initializing
error message 59, 60–61. *See also* troubleshooting
errors. *See* troubleshooting
Escape key 138
Ethernet card 133, 143
Ethernet media adapter 144
Ethernet network, connecting to 143–144
EtherTalk Phase 2 protocol 144
expansion cards
  communication cards 130–133
  Ethernet 134, 145
  installing 117–136
  PCI cards 124–129
  types of 117–118
  warning about 118

extensions
incompatible 69
saving 62
turning off before rebuilding desktop 62
Extensions Manager, starting 141
Extensions Manager control panel 62, 63
exterior of computer. *See* case
external monitor, connecting 145–146
external SCSI devices, connecting 39–42
external video connector 35
External Video Connector kit 118
eye fatigue 103

F

fatigue
eye 103
general 105
file formats for CD-ROM discs 54–55
File menu
Eject CD command 54
Open command, keyboard shortcut for 31
Put Away command 54
Quit command 61
files
backing up 48–49
copying from *Macintosh Performa CD* 45, 100
failure to find 75
Finder
activating 22
Macintosh Guide and 22
shortcuts for commands in 31–32
floppy disk drive, location of 34
floppy disks
backing up 48–49
creating a startup floppy disk 100
DOS 67–68
ejecting 46, 68, 111
handling 109
inserting 46
installing programs from 46
labeling 109
protecting information on 48–49
repairing 87–88
starting up from 65, 100
storing 109
troubleshooting 67–68
folders
Apple Extras folder, Read Me files in 19, 45
icon for 16
formats for CD-ROM discs 54–55
formatting disks. *See* initializing
function keys 138
furniture, arranging for comfort 103–104

G

glare on screen 104, 105
graphics, Photo CD images as source of 57
grounded outlet 4
grounding plug 2, 4
Guide menu
Drive Setup command 66
Hide Balloons command 30
icon for 15, 21
Macintosh Guide command 22
purpose of 15
Shortcuts command 31
Show Balloons command 30
Guide menu icon 15, 21

H

handling computer equipment
cables 107
CD-ROM discs 109–110
DRAM DIMMs 155
floppy disks 109
general instructions for 107
keyboard 108
monitor 108

handling computer equipment *(continued)*
PCI card 126
power supply 111
hard disk
backing up files on 48–49
copying *Macintosh Performa CD* files to 100
damaged 84, 86–88, 100
icon not appearing on desktop 66–67
initializing 89–90
inserting and ejecting floppy disk 46
installing application programs on 46–47
installing system software on 91–100
location of 35
protecting information on 49, 100
rebuilding desktop on 62–63, 67, 141
repairing 84, 87–88
replacing 43
restoring information on 49
testing 84, 86–87
using for additional memory 50
hard disk icon
appearance of 16
failure to appear on desktop 66–67
headphone and SRS 3D Surround Sound 36
headphone jack 33
health-related information 101–105. *See also* safety precautions
arranging your office 103–104
electromagnetic emissions 105
eye fatigue 103
general fatigue 105
musculoskeletal discomfort 102
posture 103–104
help, sources of 19, 21–32. *See also* Balloon Help; Guide menu; Macintosh Guide; troubleshooting
HFS file format 55
Hide Balloons command (Guide menu) 30
Hierarchical File System file format 55
High Performance Module. *See also* memory
configurations for 149
installing 156
high-resolution Photo CD images 58
High Sierra discs 80
High Sierra file format 55, 80
hotline for customer support 19
“Huh?” button in Macintosh Guide 29

I, J

icons 16
appearing incorrectly on screen 67
application icon 16, 48, 62
bomb icon 59, 61, 70
CD-ROM disc icon 54
dimmed icons 48
Disk First Aid icon 87
disk icon with blinking question mark 63, 92, 93
disk icon with X 65
document icon 16
Drive Setup icon 89
folder icon 16
hard disk icon 16, 66–67
Restore System Software icon 95
“sad Macintosh” icon 66
SCSI icon 39
Index button in Macintosh Guide 25–26
initializing
DOS disks 68
floppy disks 67–68
hard disk 89–90
insertion point, setting 72
installing
application programs 46–47
expansion cards 117–136
communication card 130–133
PCI card 124–129
warning about 118

memory 147–160
DRAM DIMMs 154–155
High Performance Module 156
system software 91–100
reinstalling all original software 97–99
reinstalling system software 95–97
troubleshooting 99
when to install or reinstall 91–92
interference 108
internal hard disk. *See* hard disk
internal storage devices, replacing 43
International Standards Organization file format 55
ISO 9660 discs 80
ISO 9660 File System file format 55

K

keyboard
adjusting angle of 7
connecting 7
handling 108
posture for 103–104
shortcuts with. *See* keyboard shortcuts
special keys on 138, 141
spills on 107, 108, 110
troubleshooting 72
typing special characters and symbols on 139–140
keyboard cable 7
keyboard shortcuts (key combinations) 31–32
for Finder tasks 31–32
to eject floppy disk 68
to force computer to restart 141
to force program to quit 141
to ignore the selected startup device 141
to quit application 61, 137
to rebuild desktop 141
to restart computer when Restart command cannot be chosen 61
to start Extensions Manager 141
to turn off system extensions 141
Key Caps program 139–140
key combinations. *See* keyboard shortcuts

L

labeling floppy disks 109
Launcher 10
opening applications in 45
putting application programs into 46
Service/Support area of 61
level 2 memory cache. *See* High Performance Module
lifting the computer 2
lighting, eye fatigue and 103
line splitter for connecting modem 6
local area network. *See* network
locking and unlocking mouse 114–115
logic board
first SCSI device in chain 40
installing High Performance Module on 149, 156
PCI slot on 128
removing 122
replacing 133–134
reset button on 134
SCSI ID number for 40
Look For button in Macintosh Guide 27–28

M

Macintosh desktop. *See* desktop
Macintosh Guide 22–29
“Huh?” button in 29
searching for specific topic in 23, 27–28
tips for using 29
viewing list of topics in 23–24
viewing topics alphabetically in 23, 25–26

Macintosh Guide command (Guide menu) 22
Macintosh Guide window
closing 29
Index button 23, 25–26
Look For button 23, 27–28
moving 22, 29
opening 22
returning to 24
Topics button 23–24
Macintosh Performa CD: Guided Tour disc
reinstalling programs from 96, 99
Macintosh Performa CD: Performa Software disc
checking for damaged disk with 86–87
copying its files to hard disk 100
Drive Setup program on 66, 86, 89
initializing hard disk with 89
preinstalled applications on 45
reinstalling system software with 92–99
starting up from 93–95
MacTCP 144
maintenance
CD-ROM discs 79, 109–110
CD-ROM drive 110
cleaning computer equipment 112–113
floppy disks 109
keyboard 108
monitor 108, 112
mouse 71, 112–113
screen 105
media adapter 144
memory
cache configurations 148
clearing to solve problems 61
DRAM configurations 148–149
DRAM DIMMs 154–155
High Performance Module 149, 156
increasing to run several applications 48
installing 147–160
ROM (read-only memory) 51
running out of 69
used by application programs 50
used by Photo CDs 58
using hard disk as 50
virtual 49, 69
Memory control panel 69
older Macintosh programs and 50
virtual memory and 69
menu bar 15
menus 15
Apple menu 17, 56, 139
Application menu 15, 47–48
File menu 31, 54, 61
Guide menu 15, 30, 31, 66
opening 15
Special menu 16, 17, 61
microphone 38
mirroring, video 145–146
modem
internal, connecting 5–6
port 5–6, 34, 35
Modern Memory Manager, older Macintosh programs and 50
monitor. *See also* screen
adjusting angle of 8
cleaning 112
connecting a second monitor for video mirroring 145–146
displaying images on two monitors at once 145–146
electromagnetic emissions from 105
handling 108
position of 104
Monitors & Sound control panel 36, 37, 145
mouse
cleaning 71, 112–113
connecting 6
holding 13
locking and unlocking 114–115
moving 13–14
moving pointer with 13–14

position of 104
shortcuts using 31–32
troubleshooting connections of 71
mouse button 13
mouse cable 6
Mouse Skills 10, 13–14
moving
Macintosh Guide window 22, 29
mouse 10, 13–14
pointer on screen 13–14
musculoskeletal discomfort 102

N

network
backing up files on 49
Ethernet, connecting to 143–144
sharing CD-ROM discs over 58
Network control panel 144
numeric keys 138

O

office arrangement guidelines 103–104
online services, access to 130
on/off switch. *See* power switch
Open/Close button on CD-ROM drive 52, 53
Open command (File menu), shortcut for 31
opening
application programs 45, 75
CD-ROM drive tray 52–53, 77
computer 119–122, 149–152
documents, troubleshooting 73, 79
Macintosh Guide 22
menus 15
Photo CD images 56–58
Option key 138, 140

P

PC Exchange control panel 67, 74
PCI access cover 35
PCI access port 127
PCI card, installing 124–129
PCI card adapter 117, 126, 127
PCI slot 117, 126, 128
performance problems 82
Performa Tutorial program 10
peripheral component interconnect. *See* PCI
phone cord for modem 5–6
Photo CDs 56–58
file formats for 55
memory used by 58
obtaining 57
opening images on 56–58
recording photographs as 57
resolution of 58
single-session and multisession 57
troubleshooting 81
viewing contents of 58
working with 56–58
photographs, putting on Photo CDs 57
playing audio CDs 56
plugging in the computer 2–4
pointer
frozen on screen 59, 71
moving on screen 13–14
placing on insertion point 72
pointing devices, troubleshooting 71. *See also* mouse
ports
Apple Desktop Bus (ADB) port 6, 7, 34, 35
modem port 5–6, 34, 35
plugging connectors into 107
printer port 34, 35
SCSI port 35, 39
security lock port 35
sound input port 35
sound output port 35
posture for using the computer 103–104

power, warning about 33
power cord 3
Power key
failure of 61
location of 34
purpose of 138
restarting the computer with 18, 61
turning the computer off with 17
turning the computer on with 9, 18
power plug 3
power socket 35
power strip 4
power supply, safety precautions for 111
power switch
location of 35
"off" position 3
"on" position 9, 18
when to use 18
printed circuit board. *See* expansion card
printer, troubleshooting 65, 83
printer port 33, 35
problems. *See* troubleshooting
processor 161
programs. *See* application programs
protocols for Ethernet networks 144
Put Away command (File menu) 53

Q

question mark icon
blinking at startup 64, 92, 93
as Guide menu indicator 15, 21
Quit command (File menu), what to do when it cannot be chosen 61
quitting applications
shortcut for 137
trouble 77
when problems occur 61

R

radio and television interference 108
Read Me files in the Apple Extras folder 19
read-only memory (ROM) 51
rebuilding desktop 62–63, 67
shortcut for 141
recording
computer images on VCR 146
photographs as Photo CDs 57
sound 38
reflections on screen 104, 105
reinstalling system software 91–100
troubleshooting 99
remote control sensor 34
repairing
computer 60–61
floppy disks 87–88
hard disk 84, 87–88
repetitive stress injuries 102
resolution, of Photo CDs 58
Restart command (Special menu) 61
restarting the computer
after Shut Down 18
forcing the computer to restart 141
problems restarting 62, 73, 77
using restart to solve problems 61
Restore All Software program 98
Restore System Software program 95–97
restoring system software 95–97
Return key 138
ROM (read-only memory) 51

S

"sad Macintosh" icon 66
safety precautions 106–110. *See also* health-related information
CD-ROM discs 109–110
CD-ROM drive 110
connecting equipment 33
electrical hazards, avoiding 3

electromagnetic emissions 105
floppy disks 109
general precautions 106
grounding plug 4
handling computer equipment 107–110
power supply 111
turning off computer before connecting equipment 33
when to turn off computer and pull the plug 106
saving extensions 62
screen. *See also* monitor
adjusting angle of 8
adjusting level of light and dark on 37
basic elements on 15
"burn-in," avoiding 108
cleaning 105
dark 11, 63
glare and reflection on 104, 105
height and distance of 104
interference on 108
moving pointer on 13–14
off-center images on 64
screen control buttons 37
screen saver programs 108
scroll arrows on windows 16
SCSI chain 39–41
cables for 40–42
connecting devices in 39–42
number of devices supported in 39
SCSI ID numbers and 39, 40
terminators in 41, 42
SCSI devices
connecting 39–42
device drivers for 42
ID numbers for 39–40
terminators for 41, 42
turning on before the computer 42
SCSI icon 39
SCSI ID numbers 39, 40
SCSI peripheral interface cable 40
SCSI port 35, 39
SCSI system cable 40
SCSI terminator 41, 42
security lock port 35
service 60, 61
setting up
adjusting keyboard angle 7
adjusting screen angle 8
connecting external SCSI devices 39–42
connecting mouse and keyboard 6–8
installing expansion card 117–136
plugging in the computer 2–4
turning the computer on for the first time 9–11
Shift key 138
shortcuts 31–32
for Finder tasks 31–32
to eject floppy disk 68
to force application program to quit 141
to force computer to restart 141
to ignore the selected startup device 141
to quit an application 61, 137
to rebuild the desktop 141
to restart the computer 61
to start the Extensions Manager 141
to turn off system extensions 141
Shortcuts command (Guide menu) 31
Show All command (Application menu) 48
Show Balloons command (Guide menu) 30
Shut Down command (Apple or Special menu) 17
restarting computer after 18
shutting down the computer 17–18
size box on windows 16
sleep, waking from 17, 63
slots
cache module slot 156
communication slot 117, 132
PCI slot 117, 126, 128
video-in slot 117

software. *See* application programs; system software
sound. *See also* audio CDs
  recording 38
  troubleshooting 80–81
  volume of 36, 80
sound control buttons 36
sound control panel. *See* Monitors & Sound control panel
sound input port 35
sound output port 35
speakers, monitor's built-in 36
special characters and symbols 139–140
special keys 137–138, 141
Special menu
  Empty Trash command 16
  Restart command 61
  Shut Down command 17
spills
  on CD-ROM drive 110
  on computer equipment 107
  on keyboard 107, 108, 110
SRS(●) 3D Surround Sound 36
starting up. *See also* startup disk; turning computer on
  from CD-ROM disc 76, 85–86
  from floppy disk 64–65, 100
  from *Macintosh Performa CD* 92–94
  question mark icon appears during startup 43, 92, 93
  troubleshooting 11, 64–65, 85–86, 92, 93
startup device, telling the computer to ignore the selected device 141
startup disk
  CD-ROM disc as 76, 85–86
  creating a startup floppy disk 100
  floppy disk as 64–65, 100
  Macintosh Performa CD as 92–94
  purpose of 91
  rebuilding desktop of 62–63
  repairing 84
  troubleshooting 64–65, 85–86
static electricity, avoiding while installing cards 119, 121
storage devices, replacing 43
storing floppy disks 109
support 19, 60, 61
support hotline 19
Surround Sound 36
symbols, typing 139–140
system error 59, 61, 70
system extensions
  incompatibility of 69, 70
  turning off 141
System Folder, extra copy warning 47
system software
  backup copies of 49
  cannot be found by Macintosh 64–65
  copying files from *Macintosh Performa CD* to your hard disk 100
  creating a startup floppy disk 100
  installing 91–100
  protecting information on a hard disk 100
  purpose of 91
  reinstalling all original software 97–99
  reinstalling system software 95–97
  troubleshooting 99
  using the *Macintosh Performa CD* as a startup disk 92–94
  when to install or reinstall 91–92
  when to use the *Macintosh Performa CD* 92

T

Tab key 138
tape drive, backing up to 49
TCP/IP protocol 144
television
  displaying computer images on 146
  interference 108
  watching broadcasts on the computer 45

terminators in SCSI chain 41
testing a hard disk 86–87
title bar on window 16
Topics button in Macintosh Guide 23–24
Trash 16, 30
  dragging CD-ROM disc icon to 53
troubleshooting 59–90. *See also* Balloon Help; Macintosh Guide
  application programs 47, 69–70, 73, 77
  audio CDs 80–81
  "burn-in" on screen 108
  caret prompt on screen 75
  CD-ROM discs 52, 78–81, 85–86
  CD-ROM drive 76–77
  clock/calendar 63
  common problems 63–75
  computer performance decreases 82
  dark screen 11, 63
  diagnosing problems 60
  document cannot be opened 73
  DOS documents 73–74
  ejecting floppy disk 68, 111
  error messages 59, 60–61
  file cannot be found 75
  floating-point unit needs to be installed 69
  floppy disk 67–68, 87–88, 111
  hard disk 84, 86–88, 89–90, 100
  hard disk icon does not appear on desktop 66–67
  High Sierra discs 80
  icons do not appear correctly on screen 67
  ISO 9660 discs 80
  keyboard 72
  memory 69
  mouse connections 71
  off-center image 64
  Photo CDs 81
  pointer does not move when you move the mouse 71
  power switch does not turn off computer 61
  printer problems 65, 83
  question mark icon at startup 64, 92, 93
  quitting application programs when problem occurs 61
  rebuilding desktop 62–63
  reinstalling system software 95–97
  repairing damaged disks 84, 86–88
  restarting the computer 61–62
  shutting down the computer 18
  software problems 69–70
  solving problems 61, 62–63
  sound problems 80–81
  spills 107, 108, 110
  startup problems 11, 64–65, 85–86, 92, 93
  system error 70
  system software problems 64–65
  turning computer off 18
  turning computer on 11
  typing on keyboard produces nothing on screen 72
  where to find answers 19
turning computer off
  troubleshooting 18
  when power switch fails 61
  when Shut Down fails 18
  with Power key 17
  with power switch 18
  with Shut Down command 17
turning computer on
  after Shut Down 18
  for the first time 9–11
  troubleshooting 11
  with Power key 9, 19
  with power switch 9
turning SCSI devices on before the computer 42
tutorial program 10, 13–14
TV tuner card 34, 35, 46
typing special characters and symbols 139–140

U

unlocking mouse 115

V

VCR, recording computer images on 146
video, watching on the computer 45
video connector, external 35
video connector kit 118
video input card 34, 35, 45
video-in slot 117
video mirroring 145–146
video screen. *See* screen
virtual memory 69
volume
  adjusting 36
  troubleshooting 80

W, X, Y

waking computer from sleep 17, 63
warranty 60
welcome screen 10, 14
windows 16. *See also* Macintosh Guide window
  bringing hidden portions of into view 16
  bringing to the front 16
  changing shape of 16
  changing size of 16, 29
  closing 16
  hiding and showing on the desktop 48
  moving 16

Z

zoom box on windows 29

Macintosh Performa
User's Manual

Includes setup, troubleshooting, and health-related information for Macintosh Performa 5400 series computers

Apple Computer, Inc.

© 1996 Apple Computer, Inc. All rights reserved.

Under the copyright laws, this manual may not be copied, in whole or in part, without the written consent of Apple. Your rights to the software are governed by the accompanying software license agreement.

The Apple logo is a trademark of Apple Computer, Inc., registered in the U.S. and other countries. Use of the “keyboard” Apple logo (Option-Shift-K) for commercial purposes without the prior written consent of Apple may constitute trademark infringement and unfair competition in violation of federal and state laws.

Every effort has been made to ensure that the information in this manual is accurate. Apple is not responsible for printing or clerical errors.

Apple Computer, Inc.
1 Infinite Loop
Cupertino, CA 95014-2084
(408) 996-1010

Apple, Apple Desktop Bus, the Apple logo, AppleTalk, EtherTalk, GeoPort, LaserWriter, LocalTalk, Mac, Macintosh, Performa, QuickTake, and QuickTime are trademarks of Apple Computer, Inc., registered in the U.S. and other countries.

AppleCD, At Ease, Balloon Help, Disk First Aid, Extensions Manager, Finder, and Foreign File Access are trademarks of Apple Computer, Inc.

Adobe and PostScript are trademarks of Adobe Systems Incorporated or its subsidiaries and may be registered in certain jurisdictions.

Helvetica and Times are registered trademarks of Linotype-Hell AG and/or its subsidiaries.

PowerPC and the PowerPC logo are trademarks of International Business Machines Corporation, used under license therefrom.

SRS and the SRS logo are trademarks of SRS Labs, Inc., registered in the U.S. and other countries. Manufactured under license from SRS Labs, Inc. Purchase of this product does not convey the right to sell recordings made using the Sound Retrieval System.

Simultaneously published in the United States and Canada.

Mention of third-party products is for informational purposes only and constitutes neither an endorsement nor a recommendation. Apple assumes no responsibility with regard to the performance or use of these products.

Contents

Communications regulation information vii

Preface Welcome to Macintosh ix

1 Getting Started 1

Plugging in the computer 2

Installing an expansion card 4

Connecting the modem 5

Connecting the mouse and keyboard 6

Adjusting the angle of the screen 8

Connecting other equipment 8

Turning the computer on for the first time 9

Problems starting up? 11

What's next? 12

Learning the basics in the Performa Tutorials 13

Reviewing the basics 15

Turning the computer off 17

Turning the computer on 18

Where to find answers 19

2 Getting Help 21

Getting answers to your questions 22

Tips for using Macintosh Guide 29

Identifying what's on your computer screen 30

Learning useful shortcuts 31

3 Expanding Your Computer and Using Special Features 33

Using the sound control buttons on your computer 36

Using the screen control buttons on your computer 37

Using the built-in microphone 38

Connecting external SCSI devices (such as a scanner or external hard disk) 39

Expanding memory 43

Adding an Ethernet card or a second monitor 43

Replacing internal storage devices 43

4 Using Programs and Backing Up Disks 45

Installing application programs 46

Working with several programs at a time 48

Protecting the information on a disk 49

Using application programs designed for the PowerPC microprocessor 50

Using older Macintosh programs 50

5 Using the Built-in CD-ROM Drive 51

Inserting a CD-ROM disc 52

Ejecting a CD-ROM disc 53

Using the CD-ROM discs that came with your computer 54

Types of compact discs you can use 54

Playing audio CDs 56

Working with Photo CDs 56

Sharing a CD-ROM disc over a network 58

6 Troubleshooting 59

When you have questions 59

If you have trouble 59

Solutions to common problems 63

Solutions to CD-ROM problems 76

If your computer's performance decreases 82

Solving printer problems 83

Repairing a damaged disk 84

Initializing a hard disk 89

7 Installing or Reinstalling Your Software 91

When should you install or reinstall system software? 91

When to use the *Macintosh Performa CD: Performa Software* 92

Using the CD as your startup device 92

Reinstalling your system software 95

Reinstalling all your original software 97

If you still have problems 99

Copying files from the CD to your hard disk 100

Protecting the information on your hard disk 100

Creating a startup floppy disk 100

Appendix A Health, Safety, and Maintenance Tips 101

Health-related information about computer use 101

Safety instructions 106

Handling your computer equipment 107

Cleaning your equipment 112

Locking and unlocking the mouse 114

Appendix B Installing an Expansion Card 117

Opening the computer 119

Installing a PCI card 124

Installing a communication card 130

Closing the computer 133

Appendix C Special Keys on Your Keyboard 137

Typing special characters and symbols 139

Special key combinations 141

Appendix D If You Purchase Additional Equipment 143

Connecting to an Ethernet network 143

Connecting a second monitor for video mirroring 145

Appendix E Installing Additional Memory 147

DRAM configurations 148

High Performance Module configurations 149

Installing the DIMM or High Performance Module 149

Index 161

Communications regulation information

FCC statement

This equipment has been tested and found to comply with the limits for a Class B digital device in accordance with the specifications in Part 15 of FCC rules. See instructions if interference to radio or television reception is suspected.

Radio and television interference

The equipment described in this manual generates, uses, and can radiate radio-frequency energy. If it is not installed and used properly—that is, in strict accordance with Apple's instructions—it may cause interference with radio and television reception.

This equipment has been tested and found to comply with the limits for a Class B digital device in accordance with the specifications in Part 15 of FCC rules. These specifications are designed to provide reasonable protection against such interference in a residential installation. However, there is no guarantee that interference will not occur in a particular installation.

You can determine whether your computer system is causing interference by turning it off. If the interference stops, it was probably caused by the computer or one of the peripheral devices.

If your computer system does cause interference to radio or television reception, try to correct the interference by using one or more of the following measures:

- Turn the television or radio antenna until the interference stops.
- Move the computer to one side or the other of the television or radio.
- Move the computer farther away from the television or radio.
- Plug the computer into an outlet that is on a different circuit from the television or radio. (That is, make certain the computer and the television or radio are on circuits controlled by different circuit breakers or fuses.)

If necessary, consult an Apple-authorized service provider or Apple. See the service and support information that came with your Apple product. Or, consult an experienced radio/television technician for additional suggestions.

IMPORTANT Changes or modifications to this product not authorized by Apple Computer, Inc., could void the FCC Certification and negate your authority to operate the product.

This product was tested for FCC compliance under conditions that included the use of Apple peripheral devices and Apple shielded cables and connectors between system components. It is important that you use Apple peripheral devices and shielded cables and connectors between system components to reduce the possibility of causing interference to radios, television sets, and other electronic devices. You can obtain Apple peripheral devices and the proper shielded cables and connectors through an Apple-authorized dealer. For non-Apple peripheral devices, contact the manufacturer or dealer for assistance.

DOC statement

DOC Class B Compliance This digital apparatus does not exceed the Class B limits for radio noise emissions from digital apparatus as set out in the interference-causing equipment standard entitled “Digital Apparatus,” ICES-003 of the Department of Communications.

Observation des normes—Classe B Cet appareil numérique respecte les limites de bruits radioélectriques applicables aux appareils numériques de Classe B prescrites dans la norme sur le matériel brouilleur : “Appareils Numériques”, NMB-003 édictée par le ministre des Communications.

VCCI statement

情報処理装置等電波障害自主規制について

この装置は、第二種情報装置（住宅地域又はその隣接した地域において使用されるべき情報装置）で住宅地域での電波障害防止を目的とした情報処理装置等電波障害自主規制協議会（VCCI）基準に適合しております。

しかし、本装置をラジオ、テレビジョン受信機に近接してご使用になると、受信障害の原因となることがあります。

取扱説明書に従って正しい取り扱いをしてください。

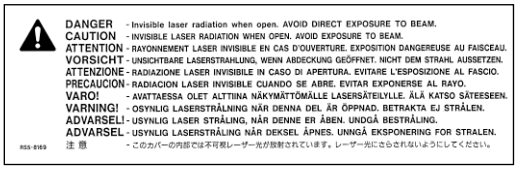
CD-ROM drive

WARNING Making adjustments or performing procedures other than those specified in your equipment’s manual may result in hazardous exposure.

WARNING Do not attempt to disassemble the cabinet containing the laser. The laser beam used in this product is harmful to the eyes. The use of optical instruments, such as magnifying lenses, with this product increases the potential hazard to your eyes. For your safety, have this equipment serviced only by an Apple-authorized service provider.

If you have an internal Apple CD-ROM drive in your computer, your computer is a Class 1 laser product. The Class 1 label, located in a user-accessible area, indicates that the drive meets minimum safety requirements. A service warning label is located in a service-accessible area. The labels on your product may differ slightly from the ones shown here.

Class 1 label



Service warning label

Welcome to Macintosh

Congratulations on the purchase of your new Macintosh. Your computer is designed to give you the highest performance combined with real ease of use—it's easy to set up, easy to use, and easy to expand. This book will guide you through the setup procedure, tell you how to expand your Macintosh, and provide many tips on using your new system.

Your Macintosh computer is powered by the new PowerPC™ microprocessor (or "chip"). This microprocessor was designed by Apple Computer, Inc., Motorola, Inc., and IBM Corporation. The PowerPC microprocessor uses Reduced Instruction Set Computing (RISC) technology to deliver very high performance at the lowest possible cost. The PowerPC RISC microprocessor represents the state of the art in microprocessor design.

Your new Macintosh will run almost all of your existing Macintosh software, but for best performance and greatest speed, look for the new software programs designed especially for computers that contain the PowerPC microprocessor. You'll find PowerPC microprocessor–compatible programs at any software store that carries products for the Macintosh computer.